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Physical Society. Guy's Hosp:

PRACTICAL ILLUSTRATIONS

xxxv-13

OF

TYPHUS FEVER,

OF THE

COMMON CONTINUED FEVER,

AND OF

INFLAMMATORY DISEASES,

&c. &c.

BY

JOHN ARMSTRONG, M.D.

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Human experience, which is constantly contradicting theory, is the great test of truth. DR. SAMUEL JOHNSON.

THIRD EDITION.

LONDON:

PRINTED FOR BALDWIN, CRADOCK, AND JOY,

PATERNOSTER-ROW.

1819.

628417

C. Baldwin, Printer,
New Bridge-street, London.

TO

JOHN RALPH FENWICK, M.D.

OF DURHAM.

MY DEAR SIR,

KNOWING no individual who unites in his character more talent and benevolence than yourself, I inscribe this volume to you, as a token of my sincere respect and esteem.

Believe me to remain, dear Sir,

Your much obliged and faithful friend,

JOHN ARMSTRONG.

July 31*st*, 1816.

PREFACE.

THE mind which has been exclusively directed to the investigation of a favourite science, is unwilling to persuade itself that its powers, however feeble, have been concentrated in vain; since the faintest rays, when collected into a focus, can produce some degree of illumination. It was an impression of this kind which first led me to think of publishing the results of my experience; and the present volume is a part of the series of commentaries on acute diseases, promised at the publication of some facts concerning the puerperal fever. During an extended practice of several years, my views, with respect to the treatment of fevers in general, have undergone gradual and at length great changes; and it is hoped, that an impartial exhibition of the causes, nature, and object of those changes may not be wholly useless. No disease

is here brought forward, with the exception of the plague, but what has repeatedly fallen under my observation; and typhus has been made the foundation for most of the principles attempted to be established. By the term typhus many have meant that combination of malignant symptoms which may take place in the last stage of any acute disease, and hence they have said that to deplete is death in typhus; but though it doubtless would be so under the ultimate symptoms supposed by them to constitute typhus, yet this is an abuse of the term, which in the subsequent pages denotes a specific disease that, like the epic poem of ancient critics, has a beginning, a middle, and an end.

Some of the advised methods of cure differ from those taught by certain medical professors and lecturers; but whatever regard I entertain towards men justly eminent for their rank and acquirements, I am morally bound to maintain what experience has shown me to be efficacious, how much soever it may oppose prevailing opinions. Now and then I have felt it a duty pointedly to dissent from the doctrine of noted authors, because error is always most dangerous when sanc-

tioned by a celebrated name; yet fully sensible of their general superiority, it has been my aim to mingle respect with animadversion. So far as recollection or extracts could assist, acknowledgments have been made for the thoughts really suggested by the perusal of other works; and therefore if any omissions be discovered, they ought to be imputed to forgetfulness alone. At the same time, it must be remembered, that medical inquirers may make similar observations respecting diseases, without being at all indebted to each other, as distant and unacquainted astronomers may, by their telescopes, discover similar phenomena.

Febrile affections have acquired an additional claim to notice, from their extensive prevalence in many districts of the United Kingdom, since the first publication of this work; and having been placed in situations favourable for observation, I have endeavoured, in this revised Edition, to give a much more extended view of the subject. At the suggestion of an able friend, the different topics, before blended in the pathology and treatment of typhus, have been separated, and now form a series of distinct illustra-

tions of the principles advanced. Among many others, one advantage of this new arrangement is, that it has enabled me to express my thoughts with greater precision as to those very particulars upon which the chief peculiarities of my doctrine are founded; for in thus again soliciting the attention of professional readers, I must inform them, that the practice recommended is by no means so uniform as some have represented, but varied by many minute circumstances, to point out which was the main reason of my attempting the illustration of acute diseases.

J. A.

23, *Southampton-row, Russell-square,*
July, 1819.

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PRACTICAL ILLUSTRATIONS

OF

TYPHUS FEVER,

OF THE COMMON CONTINUED FEVER,

AND

OF INFLAMMATORY DISEASES, &c.

INTRODUCTION.

NUMEROUS theories have been formed to explain the nature of fevers, but the history of medicine proves, that none have been so constituted as to remain permanent. At different periods, by accident, genius, or diligence, many discoveries were made, which opposed the prevailing doctrines of the day, or for which those doctrines could not satisfactorily account. By the investigations which such occurrences naturally produced, the most elaborate theories, time after time, have been overthrown, and others, supposed to extend to a greater number of appearances, successively advanced, which in their turn have also fallen before the progressive improvements of the medical art. And as men in general are more fond of pursuing abstract inquiries than collecting and arranging

matters of fact, it is likely, that some authors will continue to erect, and others to demolish systems, until the desirable period, should it ever arrive, when general principles shall be as firmly established in physic, as in the more perfect sciences. The most celebrated of modern theories, like those of preceding ages, have been drawn from partial or imperfect views, and are more or less fallacious when tried by experiment. It is, therefore, my intention in treating of fevers to adhere, as closely as the nature of the subject will admit, to the consideration of their phenomena and effects; and to endeavour from these, together with the known powers of remedial agents, finally to deduce some special principles of treatment, capable of considerable extension.

The term fever has been used comprehensively to express a whole class of diseases, and limitedly to express some of the specific affections of that class; and it has also been employed in an abstract sense, denoting the combinations of febrile phenomena, without signifying any particular fever. One set of authors has arranged under this term every disease attended with increased action of the heart and increased heat; while another set has restricted it to those febrile disorders, which have been supposed to be independent of all local affection, and on this account called idiopathic. Nor is it uncommon to see it used as an abstract term in the medical publications of the day, as if fever were some peculiar and subtile essence, and the concourse of attendant symptoms mere accidental

appendages. But as the disorder of the constitution designated fever, has always appeared to me as the result or the sign of some antecedent change in the system, howsoever induced, an extended though a definite signification of that term will be preferred in the following pages. The pyrexiæ of nosologists shall, therefore, be considered as a class in which three orders are comprehended; two orders in which the causes are specific though at the same time essentially different, and one order in which the causes are not specific but common. The first order comprehends fevers proceeding from contagions, the second, fevers proceeding from marsh and similar miasmata, the third, fevers proceeding from the vicissitudes of the weather, and other ordinary causes. It must be manifest, that the first order admits of a subordinate division, since some of its varieties only affect the same individual once, while he may be repeatedly affected by others; but still all the varieties of this order are distinguished in arising from, and propagating themselves by peculiar contagions. The second order is characterized by exclusively deriving its origin from marsh and similar miasmata: its species certainly do not necessarily possess the power of disseminating themselves by any inherent quality; and in this they differ from the varieties of the first class, while the nature of their origin marks them from those of the third and last. The third order embraces all those fevers which proceed from the general impression of heat or cold, from local irritations, or from any cause not having the spe-

cial properties of contagion or of marsh effluvium; and therefore what are called symptomatic fevers naturally fall under this order, although it shall be shown that several of its varieties arise out of an universal impression on the system, the force of which is finally spent upon those parts which had previously been disposed to disease.

It may perhaps be asked, in objection to this arrangement, that if we do not class diseases by a reference to the similarity or discrepancy of the pathognomonic symptoms, shall we be safer in founding our arrangements on their causes, some of which may rather be conjectured than positively ascertained? Certainly if theory be allowed to influence our arrangement, it ought to be theory successfully investigated and established by observation. As it has not been *proved* that every contagious fever is in every instance produced by a specific contagion, and as considerable obscurity still hangs over the subject of marsh effluvia, it probably might have been quite as satisfactory, if the classification of fevers had been founded solely on their phenomena. Yet the arrangement here chosen, however defective it may be, presents some great pathological outlines, which I have not been able to find in any other; though it is not my design to limit myself to them throughout, but to abandon them whenever they may be likely to lead from any point of practical importance. Whatever may be the advantages of methodical arrangement in medical pursuits, I am chiefly anxious that my views on specific and determinate subjects

should be clear and comprehensive; and if I can but accomplish this, shall be content to leave, for the present, the general conceptions which relate to nosology as things only of secondary regard. How various soever the causes of fevers may be, their great and most important effects upon the vital organs are nearly the same. These effects shall be made conspicuous in the following pages, so that the reader may consider them among the leading objects of the work; and in concluding the series of illustrations, an attempt will be made to reduce the pathology and treatment of all acute fevers to a few plain principles. The nature of my plan having been thus premised, several diseases, referrible to one or other of the above orders, shall be successively examined, and first of all typhus fever in particular, as it is intended to be made the ground-work of the most important parts of the discussion.

TYPHUS FEVER.

IT is probable, that the disease now called typhus existed from a remote period, and though it is alluded to by Sydenham, it appears not to have been distinctly characterized, as an infectious complaint of its own kind, until about the beginning of the eighteenth century. Since that time, however, various works have appeared, and thrown considerable light upon this interesting distemper. Yet it must be confessed, that the term typhus is still used in medical writings, but more particularly in medical speech, far too indiscriminately. Instead of being solely confined to the individual disease in question, it is made to include a great variety of widely different affections; especially when in their course, the concomitant fever puts on a low or putrid type, as frequently happens in the last stages of many inflammatory diseases of the external and internal textures. It strikes me, that to call any species of fever typhous, which has not the contagious essence capable of producing an unequivocal typhus, is equally incorrect in logic as in language. In this essay, therefore, the word typhus shall be limited to the peculiar disease, which is allowed to originate from a specific con-

tagion, and which, doubtless, has the power of producing an affection of its own nature, in individuals exposed to its influence.

The word typhus is still too generally associated with the opinion, that the fever, which it properly designates, is in all its stages a disease of real debility; but this notion has either been taken on the word of those authorities, who for a time gave the tone to medical opinions and theories, or it has been impressed upon the minds of those who entertain it, from a contemplation of the disorder wholly limited to its advanced periods. An extensive observation, however, during a series of years, has convinced me, that the genuine typhus, so far from being of an asthenic nature, is most certainly an affection of excitement or of congestion, in its first stages, demanding at such times the evacuant plan. Entertaining these sentiments, the professional reader will perhaps excuse their brief annunciation in entering on the subject; as they may contribute to warn him against the undue influence of some early associations, and thus incline him to give a fair hearing to the facts and arguments about to be adduced.

Typhus is unquestionably most prevalent in cold or temperate climates. It would indeed appear, from an author of great research, that this disease had probably not occurred on either side of the Indian peninsula; * though it is universally

* See page 510 of an Essay on the Disease called Yellow Fever, with Observations concerning Febrile Contagion, Typhus Fever, Dy-

known, that the warmth of tropical regions is most congenial to the generation of those effluvia, which produce the remittent yellow fever. I have known, however, practical men who were confident that the contagion of typhus occasionally exists in some hot countries; but they seemed to consider, as Sir Gilbert Blane long since asserted, that there is something in those countries unfavourable to its production and continuance. In England, typhus is evidently favoured by a low temperature, being most prevalent in the cold seasons of winter and spring, generally abating or disappearing, as the heat of summer advances, and often prevailing to a considerable degree in cold wet autumns; but nevertheless it occasionally prevails at all times in the year, and is even undiminished by the hottest weather in this country, as I once witnessed when the thermometer was unusually high during the greater part of a summer. In a number of persons exposed to the contagion of typhus, some, though rarely, are attacked as early as the first or second day, and others even after the thirtieth; but perhaps the most common periods of sickening after exposure are, from the end of the first, to the middle of the third week. It has been affirmed, that it follows at so great a distance as the ninth or tenth week after exposure, but this seems very questionable. If an author is persuaded, that there must

sentery, and the Plague. By Edward Nathaniel Bancroft, M.D. London. Printed for T. Cadell and W. Davies, Strand. 1811.

be specific contagion as the source of every fever resembling typhus, he will undoubtedly go far to seek for it. When this disease once prevails, it generally assumes different forms, which may, however, be arranged under three varieties, namely, the simple, the inflammatory, and the congestive typhus. These three varieties shall first be concisely characterized, and afterwards separately examined, in order to illustrate the rules of treatment fitted for each.

In strict propriety of language, typhus can only be denominated simple in a relative sense. It is in reality, the least complicated form of the disease, in which the febrile excitement, or hot stage, is completely developed, and in which there are no decided marks of topical inflammation. The inflammatory typhus has the same open characters of general excitement as the simple; but with these are conjoined symptoms of some visceral inflammation. The congestive typhus is distinguished by the hot stage not being at all, or only imperfectly developed, and by simultaneous signs of venous congestion in one or more of the internal organs.

THE SIMPLE TYPHUS.

The simple typhus has a first stage of oppression, a second of excitement, and a third of collapse. These successive stages, but more particularly the two last, bear a pretty exact ratio to each other, as to degree, but not as to duration. The

stage of oppression is usually marked by a variety of symptoms, among which the following are mostly conspicuous. Paleness of the face; a peculiar look of dejection and weariness; some degree of darkness or livor in the integuments surrounding the eyes; prostration of strength; diminution of mental energy, and of sensibility; cold creeping sensations on the surface, or short hot and chilly fits alternately; loathing of food, nausea, or vomiting, whitish or clammy tongue; sense of weight or anxiety about the præcordia; occasional sighing, and hurried breathing; aching, heaviness, or giddiness of the head; coldness of the back, and pain of the loins; a quick, low, struggling pulse, changeable as to frequency, and even irregular as to force. These symptoms are accompanied with feelings of general uneasiness, somewhat resembling those which are experienced after a long journey, or any other great fatigue. The stage above described sometimes comes on and reveals itself with rapidity; but generally it is more insidious in its approaches, and occupies, from first to last, a period of two or three days; when, after various irregular demonstrations of re-action, it is succeeded by the second stage, or that of excitement, in which there is a complete development of the fever. In subjects who possess constitutional vigour, the tone and velocity of the circulation are now preternaturally increased, and the pulse accordingly becomes comparatively expansive, thrilly, and somewhat resisting; at least it is widely different from the

variable, confined, inelastic pulse of the former stage, and from the uniform free, and smoothly flowing one of health.* The cheeks are flushed with a dusky redness; the eyes heavy; and the lips parched. The respiration is quick; the skin almost invariably dry; the heat universally diffused, and steadily above the common point; the tongue foul; the thirst urgent; the uneasiness in the head increased; the sensorium in a highly susceptible state—every symptom, in fine, denoting an excess of excitement. This second stage of the simple typhus naturally holds a tolerably even tenor for some time. As it proceeds, however, the brain, at intervals, is usually disturbed with revery, or slight delirium, coming on towards evening, when there is an exacerbation of the fever, and receding towards morning, when there is a remission; but the prostration of strength, which is at all times very evident, is generally greatest in the periods of the exacerbations, and the tongue is then drier. During the predominance of the excitement, the bowels for the most part have a tendency to constipation. The ex-

* Perhaps some may be inclined to doubt the correctness of numbering a preternaturally increased *tone* of the circulation among the most frequent symptoms of typhus. My own experience, however, in the country, fully authorizes me to do so in the *early* periods of the simple form of the disease; and Dr. Ebenezer Gilchrist, one of the best and earliest writers on typhus, has mentioned in his tract, published in the fourth volume of the Edinburgh Medical Essays and Observations, that in many instances the pulse was full and strong. Huxham and several other authors might also be cited to prove, that this is often the case. But certainly the pulse is sometimes very changeable, as will afterwards be more particularly demonstrated.

cretions as well as secretions also undergo gradual and material changes, which are evinced by the dark and offensive nature of the feces, by the peculiar odour of the breath and whole body, and by the morbid appearances exhibited on the tongue, in the fluids formed from the liver, from the kidneys, and from other organs of secretion.

After six or seven days, sooner or later, according to its mildness or severity, the stage of excitement gradually gives place to that of collapse, which is first announced by signs of depression in the voluntary powers; by a certain degree of relaxation in the skin; by a more variable and less concentrated state of the temperature; and by a notable diminution in the force of the circulation, the pulse being of less volume, softer, and undulating. In the mildest cases, the approach of the stage of collapse may be viewed as an indication of convalescence. For although the patient may complain of much general weakness, and sometimes of soreness in the flesh, with flying pains or cramps in the extremities, yet the tongue will be found softer and cleaner, the thirst diminished, the pulse slower, the breathing deeper and less frequent, and the skin of a natural warmth as well as moisture. Besides, the patient will pass much better nights, the functions of the stomach will be in some degree restored, with an evident improvement in the appearance of the feces, and in general with a lateritious sediment in the urine. Whereas, in the more marked instances of this sort of typhus, the supervention of the stage of collapse

considerably augments the danger. The prostration of strength then becomes far greater; the pulse is commonly quicker, and always much weaker; the tongue fouler, darker, and drier; the voice fainter, and the articulation less distinct; the respiration shorter, feebler, and more anxious. The sensorial functions, too, are more disordered, and the countenance is more dejected, sunk, and inanimate. Added to these symptoms, the skin feels looser, and appears more shrivelled, while the temperature is no where so intense as in the stage of excitement, but variable in the course of the day, even on the central parts: and there is an increase of general restlessness, a more perceptible and peculiar fetor about the body, and often an irritating species of cough, which comes, as it were, in convulsive fits. In this state, the patient is disposed to lie upon his back. As the peril increases, he not only labours under subsultus tendinum, visual deceptions, low muttering delirium, and difficulty of deglutition, but has also a tendency to slide downwards in the bed, and to draw up the feet frequently towards the body.

The foregoing description is intended to apply to the simple typhus, as it runs an unimpeded course; but between its slightest and its most marked forms, there are intermediate ones, whenever it extensively prevails. Some of the worst cases of it which I ever saw, existed in subjects who had been kept in a warm, close atmosphere; and some of the mildest, in those who had inhabited cool, airy apartments. When properly

treated from an early period, this variety of the disease generally terminates favourably; but when neglected or maltreated in the beginning, it frequently proves mortal, and then dissection commonly reveals some remains of an injected state of the capillary arteries, without any effusion of coagulable lymph, adhesion of parts, gangrene, or suppuration, which are the results of genuine inflammation. Some writers have stated, that, on minute inspection of the bodies of patients who died in simple fever, no derangement whatever could be detected. Nevertheless I am inclined to think, that such occurrences are exceedingly rare, although it cannot be questioned that in some cases, as I have myself witnessed, the morbid appearances are not sufficient to account for the unfavourable issue; and we are almost compelled to infer, that it chiefly depended upon an actual exhaustion of the vital principle, induced by the preceding excitation. At the same time, however, I cannot help suspecting, that in almost every fatal instance of the simple typhus, there is really a degree of lesion in the structure of some vital organ. In the present state of our knowledge, there are perhaps many morbid changes, which elude the inquisition of the anatomist. In fact, until we are more thoroughly acquainted with the minutiæ in the natural organization of some delicate and complicated parts, we cannot expect satisfactorily to detect those slender and latent lesions, upon which, in all probability, the suspension of function more frequently depends, than is

usually conjectured. On more than one occasion, I have seen a patient sink in typhus, with all the common indications of an oppressed brain, and, on the most careful dissection of the part, nothing decidedly morbid could be discovered; yet all the circumstances of those cases, taken in conjunction, seemed almost to preclude the possibility of doubting, that the principal mischief had existed there. But such examinations ought to humble the pride of professional opinion, and to show us the necessity of acquiring more minute information.

It was once the fashion, through the influence of Cullen's genius, to illustrate the phenomena of most fevers by what occurs in the successive stages of an attack of an intermittent. These stages may in some degree convey an idea of the changes observable in the duration of the simple typhus. The cold stage of the former is somewhat analogous to the stage of oppression, while the hot and sweating stages also are resemblances of those of excitement and collapse in the latter; and the analogy, too, is the closer when we consider, that the pure intermittent is an example of simple fever, uncombined with any inflammatory affection of the viscera.

In the more marked examples of the simple typhus, the circulation is evidently disordered from the beginning of the stage of oppression: when the re-action has once taken place, the pulse continues to rise, unless timely controlled, through nearly the whole of the second stage; and the preternatural acceleration of the blood can only be said

to subside on the approach of the last stage. It cannot but be supposed, that this long continued tide of the fever, though it may leave no visible traces behind it, must make considerable impressions on certain organs of delicate structure; such as the brain for example, through which currents of blood must have repeatedly flowed with more velocity and in greater quantities than natural. But in the mildest instances of this variety, it must be admitted, that no kind of organic lesion is produced, and they consequently end favourably; and in this they likewise resemble the simplest intermittent, in which the morbid excitement of the circulation does not give rise to greater local irregularities or accumulations of blood, than can be finally removed by the energies of the constitution alone, or by very gentle expedients of art. Almost all the larger viscera can sustain a certain degree and duration of vascular distension, without their structure being thereby at all impaired, or even their functions very greatly disordered. Many of the examples which Hippocrates has so minutely related in his epidemics were fevers of simple excitement, so that they terminated favourably by some spontaneous evacuation; and when typhus prevails epidemically many cases of the simple typhus usually occur which do well either entirely without medicine, or by the very mildest means.

The characters of the simple typhus, it will be perceived, vary according to the time of its continuance; and, as some of those variations demand

correspondent changes in the mode of treatment, it is hoped, that the attempt which has been made to point out the pathognomonic signs of each of the leading stages, will be found both correct and useful. For want of having carefully noted the different expressions, which this complaint puts on at different periods, some systematic writers have almost entirely overlooked many of the most essential parts of the first and second stages; and by having dwelt principally upon the last, contributed to support the dangerous doctrine, that typhus is always a disease of real debility. There is, however, so wide a difference between apparent and real debility, that the practitioner, who would successfully conduct the treatment of febrile disorders, must attentively distinguish the one from the other. An opinion should seldom be formed wholly from external appearances, as they often mask the true character of fever, which for the most part can only be perfectly ascertained by penetrating beyond the exterior, and by inferring the state of the internal organs themselves. In matters of morality those men are constantly deceived, who judge of others from external appearances; and a similar conduct, in the concerns of medicine, often leads to the most serious mistakes of opinion and practice.

In the first stage of the simple typhus, the debility is merely apparent, and chiefly dependent upon the preternatural accumulations of blood in the veins about the head, heart, liver, and other internal parts, while there is less circulating upon

the surface of the body, than in a natural state. In the second stage, the debility is still only apparent, being then the consequence of over-excitement of the heart and arteries; but in the third and last stage, beyond all dispute, the debility is real, as it is then connected with a general collapse, which sooner or later succeeds to a state of febrile excitement, as certainly as exhaustion follows a fit of intoxication. Those who have adopted the beautiful, but deceptive, doctrines of Dr. John Brown, will on no account admit, that the debility of typhus is only seeming, during the greater part of its progress. In candour, the impartial observer must confess, that this proposition is not evident at first sight; yet it is as certainly true as any in physic, as is proved from the debility in the first and second stages being increased by wine and cordials, and lessened by a spare regimen and evacuations.

Soon after the attack of this fever, there is a peculiar depression of the mental and voluntary powers, which has been justly placed, by authors, among those symptoms, that most forcibly press themselves on the attention of practitioners, and of which patients most frequently complain. This peculiar depression has generally been thought to indicate, that the brain and nerves are primarily affected, as they constitute a medium, through which the mental and voluntary powers extensively operate. Accordingly we find, that several celebrated theorists, differing widely on subordinate points, agree in assuming, that typhus is a disease

in which the energy of the nervous system is directly and greatly impaired. But, doubtless, far too much stress has been laid on this assumption, an assumption which, it is to be feared, has done considerable harm, by leading to the stimulant treatment, and by rather fixing the attention upon one train of symptoms, than directing it to a comprehensive view of the whole.

The general system comprehends within itself many subordinate systems, the proper functions of which must harmonize to form perfect health; and the constitution of our frame is such, that no one part of importance can be materially disordered without re-acting on other parts, which in their turn likewise give rise to a series of morbid actions —and thus the whole system is finally drawn into consent. Every limited theory of fever, therefore, must necessarily be erroneous, whether founded upon diminished nervous energy, or any other plausible hypothesis; since it must be at once apparent to unbiassed individuals, that almost all the organs and functions of the body are brought, in one way or other, under the influence of the disease. Yet if any particular system be more affected than another, it is the sanguiferous, through which the *permanent* effects of fever are chiefly to be traced, and by which the state of the brain and nerves, at least, seem ultimately to be regulated, how much soever the nervous system may be immediately concerned in the primary impressions. So great indeed, in a practical point of view, is the importance of attending to the state

of the circulation in febrile complaints, that guarding against what are called determinations of blood to the different viscera, and removing preternatural accumulations, whether congestive or inflammatory, when they actually take place, will be found to constitute one of the grand secrets of successful treatment.

It is not perhaps easy to distinguish simple excitement of the circulation from actual inflammation. Yet every experienced and unprejudiced practitioner will readily allow, that fevers do occur, in which there is a general increase of arterial action, without inflammation; as might be instanced in the disease of lying in women called the weed, in the mildest forms of intermittents, and in several of the febrile affections of children. But what is the difference between simple excitement of the circulation and inflammation? The chief difference seems to consist, not in the state of the general circulation, but in that of particular parts. The action of the heart and larger arteries is alike augmented in both; but there is in inflammation a greater local accumulation of blood, than in simple excitement. Nevertheless topical accumulations of the blood take place in disorders of simple excitement; and we often see it spontaneously terminate, by what may be called pure resolution, but such a termination is comparatively rare in actual inflammation. Still it must be confessed, that the topical accumulation attendant on simple excitement, has generally a strong predisposition to inflammation; and may easily pass into the latter

state, from the heart and larger arteries continuing to propel too much blood into the capillary branches.* In short, simple excitement of the circulation and inflammation have naturally an affinity, and may so mutually approximate as to be lost in each other. In simple excitement, the blood is almost equably diffused throughout the system, in inflammation it is superabundant in particular parts. Yet when the blood is superabundant in any particular part, it must pass beyond a certain measure before it can constitute inflammation; for we would not denominate the increased afflux of blood in the intestines inflammatory, which is produced by a purgative, neither that of the skin which is produced by common rubefacients. And what is here asserted of a part, may also be asserted of the whole arterial system; for in like manner we would not call inflammatory, the condition which follows the drinking of a few glasses of wine. Excitement local as well as general may exist without inflammation, but inflammation cannot exist without excitement.

The state, then, of the circulation in the second stage of the simple typhus necessarily resembles

* Is it probable that there is a greater loss of balance between the arteries and veins in inflammation, than in simple excitement of the circulation? The relations existing between the arteries and veins in health have been well explained; but it appears to me, that we have not been sufficiently attentive to the conditions, which relatively exist between these two systems of vessels, in many acute and chronic diseases.

Since the first edition of this work, however, was published, my friend, Dr. Abercrombie of Edinburgh, has taken up this subject with respect to apoplexy, and has discussed it in a most masterly manner.

inflammation; yet, in strictness, the organs most affected, by increased accumulations of blood, may be said to be excited, rather than positively inflamed. Although, as shown in the preceding pages, this stage may, and sometimes does, proceed without decided inflammation, yet as topical inflammation may arise during its existence, the medical attendant should never be too confident, that the disease will always continue to be one of simple excitement. On the contrary, he should be constantly upon his guard from the commencement; and, day after day, make the most scrupulous inquiries, that he may be enabled to detect, and, if possible, to arrest the very first appearances of inflammation supervening in a vital quarter. The pathology of the simple typhus is applicable to almost all the mildest forms of other fevers; for from whatever cause they may originate, or however they may differ in minor respects, the states of the vital organs will be nearly similar.

It seems an acknowledged law of the animal economy, that when any part of the body is once put into a state of irritation, there is a greater flow of blood than natural in that direction. This law should always be remembered in typhus and similar fevers, which necessarily give rise to more than one local irritation at the same time. If opportunely attended to, simple irritation may generally be soon removed, but if neglected in its origin, it may tend to produce not only an increased afflux of blood, but an actual inflammation, in some part. Since then from a variety of circumstances, typhus

may, however simple in its outset, become connected with local inflammation, that modification of the complaint shall be next brought under the review of the reader.

THE INFLAMMATORY TYPHUS.

In pleurisy, and similar disorders, the seat of fever may be local, its effects general, and its nature inflammatory; but some ingenious authors, with Ploucquet and Clutterbuck at their head, seem to me to have proceeded too far, in confidently asserting that this is actually the case in what are called idiopathic fevers. As an example in point, typhus undoubtedly sometimes begins and terminates without topical inflammation; and as inflammation may occur in one or more parts, without ever producing an infectious distemper, with the true characteristics of typhus, it is evident, that inflammation is not its inseparable and essential constituent. When, therefore, this peculiar disease and inflammation are combined together, it appears only reasonable to conclude, that the latter may have been produced by cold, or any other common cause of fever, operating with the contagion; or that it may have arisen as an effect of the excitement of the heart and arteries, favoured by some predisposition to inflammation in the part affected; as an inflammatory affection of the chest often arises in the measles, though each may exist independent of the other. Some authors have contended, that the inflammation, which accompanies the complicated forms of typhus, occurs with the

fever, or even precedes it, and others, that it merely follows as a consequence of the general excitement. According to my observations, the local inflammation occasionally commences as soon as the fever itself, but generally arises during the stage of excitement; and hence, perhaps, it may be fairly inferred, that, for the most part, it stands in the relation of an effect, rather than a cause of the fever. If we reflect, that more or less venous congestion attends the first stage, it will not seem improbable, that, by a preternatural distension of the vessels, it may leave a morbid tendency in some organ or other, which might pass into inflammation, by the excitement of the second stage. It usually happens in what are called symptomatic fevers, that the inflammation is limited to one part in particular, but this does not so generally obtain in typhus: for though one organ may exhibit by far the strongest evidences of inflammation, some other part will often be affected in a less degree; and this surely favours the notion, that the topical disorders are commonly the products of the general excitement. But the mode in which inflammation is produced in typhus, it is not so practically important to investigate, as at what time it takes place, what characters it assumes, and in what parts it is seated.

In viewing typhus always as a general disease, and deeming its seat, like that of the mind, unapproachable, some noted authors have neglected to investigate its effects on the viscera and their appendages; and of course, they have almost en-

tirely overlooked those local affections, with which it is frequently connected, and which are the causes of its fatal termination in its inflammatory variety. Some eminent pathologists, however, have of late forcibly called the attention of the faculty to the morbid anatomy of fever; and this subject seems now to be in a fair train of investigation, which promises not only to correct many prevalent errors, but eventually to lead to the establishment of general principles, in the treatment of all acute fevers.

It was formerly noticed, that in the simple typhus there is generally a morning abatement and an evening exacerbation of the fever, and this is the case in most fevers of a simple character; but whenever typhus is complicated with inflammation, and the remark is alike applicable to other fevers, the morning remissions are scarcely ever observable, the continual irritation of the local disorder maintaining a more constant elevation of the temperature. It might almost seem superfluous to point out this circumstance, but some ingenious men have pretended, that where the fever at all remits it is not the genuine typhus; and by a parity of equally erroneous reasoning, it might be said, that the simple scarlet fever is altogether a different disease from the scarlatina anginosa, because the former does and the latter does not remit. In typhus, the brain, or its meninges, the spinal cord or its coverings, the lungs, the pleura, the mucous membrane of the trachea, the stomach, the liver, the peritoneum, the small

and large intestines, are the parts most liable to be attacked by an acute, or sub-acute form of inflammation. Correctly speaking, however, the acute and sub-acute forms of inflammation merely differ in degree; and, therefore, those relative terms are only meant to express the higher and lower degrees of the same morbid state. The propriety of making this distinction cannot be fairly disputed, since these different degrees of inflammation considerably vary the character and duration of the typhous cases, in which they happen to occur.

Though the sub-acute occasionally changes into the acute form of inflammation, and *vice versâ*, yet each of these forms commonly begins and proceeds with its peculiar characters. The acute form generally arises on the first, second, or third day of the second stage, and being most active, is clearly denoted. Whereas, the sub-acute form usually arises after the third day of the second stage, and being less active, is at first obscure; so that the practitioner is for some time left to form his opinion, respecting its site and extent, rather from uneasiness in particular regions, and co-incident derangements in particular functions, than from violent pain, and other palpable symptoms, attendant on the acute form.

Whenever, after an attack of typhus, there is a distinctly felt and fixed pain in the head, chest, or abdomen, with great quickness of the pulse, dryness of the tongue, anxious breathing, and much general oppression,—the presence of the acute form of in-

flammation may be inferred. If there be little or no pain, and the pulse should become very frequent, the respiration more hurried, the tongue more parched and foul, and the general oppression greater,—the approach of the sub-acute form may be apprehended. But as these modifications of inflammation require correspondent differences of treatment, it is proper that they should be more particularly noticed.

So far as my remarks have extended, the brain and its investing membranes are more subject to inflammation in typhus, than any other parts of the system. When the acute form of inflammation exists within the head, it is generally marked by various signs. Great irritability; an anxious oppressed, or intoxicated cast of the countenance; dry, foul, tongue; quick, vibratory pulse; flushed, turgid face; * deep pulsating pain in the head; increased heat of the temples, forehead, and hairy scalp; throbbing of the carotid arteries; tinnitus aurium; redness and morbid sensibility of the eyes; and more or less disorder in some other of the external senses. There are generally transient pains in the limbs; oppression of the præcordia; torpidity of the intestines; uneasy respiration, attended with heavy sighs; nausea, retching, or vomiting, augmented on motion; fretfulness and jactitation. Watchfulness, confusion of mind, visual illusions, and delirium, follow each other in

* In a few instances of this nature, I have known the face even paler than natural; the contrary, however, as stated above, is generally the case.

quick succession. If the inflammation should uninterruptedly advance, to these symptoms succeed, indifference to surrounding objects; faultering or imperfection of the speech; gradually increasing stupor; bloatedness of the face; brown or black parched tongue; low mutterings; tremors of the hands; stupid, suffused, watery eye; squinting or dilatation of the pupil; paralysis of one of the palpebræ; vibices or petechiæ; oozings of dark blood from the mouth and nostrils; stertorous breathing, general convulsions; relaxation of the sphincter muscles, and other mortal signs. Recently I saw an old and corpulent lady labouring under typhus, in whom there was, from the beginning, an excessive disturbance in the circulation of the head, and an almost incessant sickness of the stomach. In defiance of every effort, the cephalic symptoms advanced. About the fourth day from the attack, she had a distinct stroke of hemiplegia, and became totally blind in the left eye, which was affected with strabismus. Shortly after the accession of the palsy, though she had previously been afflicted with great intellectual disorder, she became perfectly collected, and continued so for several hours; when she gradually sunk into a state of collapse and coma, and at last expired in strong convulsions.

But sometimes acute inflammation of the brain in typhus is not to be discriminated by the succession of symptoms above described. In such cases, it is mostly to be recognised in the beginning by a glary blood-shot eye, a contracted pupil, an

agitated expression of the countenance, and a peculiar species of moaning, which scarcely ever ceases for a moment; and to these indications, confusion of mind, tremors of the muscles, and coma often rapidly succeed, and the patient expires at last with a bloated, pale face, and laborious breathing. The pulse in some instances of this nature is less disturbed than might be imagined from the violence of the attack, and I have known it at first little above, and before the termination even fall below its natural standard. In the commencement of most affections of the brain in fever, one of the best tests is to desire the patient to shake the head: if inflammation exist he will move it very slowly and fearfully, and complain of a great increase of uneasiness; and where it is quickly and stoutly shaken without much uneasiness, little or no danger need be apprehended in that quarter from inflammation.

When the brain is early and actively inflamed, typhus sometimes passes on with great celerity to a mortal issue, the stage of excitement not occupying more than forty-eight hours, and the subsequent one of collapse a still shorter time. In general, however, the acute inflammation of the brain proceeds less rapidly, and the disease is protracted a little beyond the first week. But the sub-acute inflammation of the same part, next to be noticed, is much more common than the preceding in typhus, and occupies, from first to last, a considerably longer period.

For some days, the sub-acute inflammation of

the brain most frequently steals on in typhus by almost imperceptible approaches. At first there are little more than the usual degrees of head-ache and of vertigo, with general lassitude, fugitive pains in the muscles or joints, torpid bowels, and uneasy feeling at the pit of the stomach, commonly accompanied with loathing of food, and a disposition to sickness of stomach, especially on any sudden change of posture. The pulse is small and quick, but the carotid, and even the temporal, arteries beat with rather more than ordinary force. The tongue at first is covered with a dirty, whitish fur; the cheeks are alternately pale and flushed throughout the day; the countenance has a heavy, wearied expression; and the eyes often feel uneasy, as if small particles of sand were in them. Besides, some of the rest of the external senses are almost always disordered, particularly the hearing, which, though occasionally more obtuse, is generally more acute than natural, and the head cannot be shaken without an increase of uneasiness. The forementioned symptoms continue without material alteration for three or four days; although the patient may often be remarked to sigh, breath quicker, and grow more irritable, as well as restless, seldom remaining long in the same place or position. At length, pain of the head, and uneasiness in the orbits of the eyes are more severely felt; the eyebrows are sometimes suddenly knit together; the arms tossed about the bed; or one or both hands now and then pressed against the forehead. The pain of the head continues to in-

crease; and in two or three days more, there are sensations of an undescribable uneasiness, constantly and distinctly referred to the brain. The eyes are now rather blood-shot, and intolerant of light; the anxiety of the præcordia is much augmented; the respiration more hurried; the heat of the surface more elevated; the face permanently flushed; the tongue drier and stiffer; and the involuntary sighing more frequent. The patient now lies at nights with his eye-lids half closed, in light distinct dozings, associated with moaning, frightful dreams, and startings; or he is harassed by perpetual watchfulness, joined with frequent wanderings of the mind. As the inflammatory affection advances, day after day the sensorial functions continue to be more and more disturbed. At last, delirium becomes unceasing, when signs of an oppressed brain gradually make their appearance; under which the patient slowly sinks into dissolution, with hiccup, petechiæ, subsultus tendinum, an apoplectic expression of the features, and a red, glary eye, floating insensibly in an envelope of mucus. When connected with the subacute kind of inflammation of the brain, typhus may continue from thirteen to twenty days, and during its course, have a considerable variety of expression; but the symptoms, already enumerated, have appeared the most common and conspicuous in the examples of this nature, which have fallen within the sphere of my observation.

In lax irritable habits, particularly in feeble hysterical women, and in constitutions broken down

by the long use of ardent spirits, the simple typhus is, now and then, accompanied with fits of wild and almost maniacal delirium. But nearly from the commencement of such cases, there are transient flushes of the face, followed by paleness; weakness and variableness of the pulse; light tremors of the hands, such as attend habitual drunkenness; general softness, and dewy moisture of the skin, increased by the slightest exertions. Besides, the heat is little augmented; there is an eager, wild, suspicious look; a peculiarly hurried, unconnected mode of speaking; and great apparent earnestness in the pursuit of a variety of imagined objects;—all or the greater part of which symptoms mark a very different state of the brain from that connected with the forementioned modifications of typhus.

The acute and sub-acute forms of inflammation, agreeably to my anatomical researches, produce in typhus nearly the same morbid appearances of the brain or meninges, the traces left by the former being merely somewhat deeper, and more extensive. The pia mater almost always exhibits marks of a previous increase of vascularity, with some coagulable lymph effused between it, and the arachnoid coat. Adhesions are often found in the convolutions and hemispheres of the brain; and the medullary part, on cutting, is covered with red points. The choroid plexus is generally turgid with blood, or the ventricles frequently contain a serous sort of fluid, especially in very young subjects; and pus is sometimes found in certain parts of the

brain. The appearances, then, about the brain on dissection, are materially different in the inflammatory, and in the simple typhus; for genuine inflammation in the former leaves, as its traces, effusion of coagulable lymph, adhesions, suppuration, and occasionally even some approaches to gangrene itself; while in the simple typhus, only some partial-injections in the capillary system are found, with perhaps an exudation of thin serum, which had taken place in the last stage of relaxation. This is not a theoretical but a pathological distinction of great importance, since, however closely allied in many respects, the pure examples of the simple, must not be confounded with the complicated examples of the inflammatory typhus; for though the simple typhus in the last stage may be attended with a permanent delirium, and that delirium with an injected state of the capillaries in the brain, yet both these states of the sensorium are combined with an universal relaxation, which demands a treatment very different from the delirium of actual inflammation, as shall afterwards be explained.

The medulla spinalis or its membranes are often inflamed at the same time as the brain or its meninges; but this connexion is not necessary, as I have known inflammation attack the former without affecting the latter, and the converse. Though inflammation of the spinal cord and its coverings is much more frequent in idiopathic fever than writers had formerly supposed, yet it is not an invariable attendant; for cases have fallen under

my inspection where no sign of it existed during the progress of the disease, and where no vestige of it could be discovered by examination after death. When inflammation is seated in the upper portion of the spinal marrow or its membranes, there is pain in the neck, increased by pressing the fingers forcibly on the cervical vertebræ, and it is almost always accompanied with pains in the upper extremities resembling rheumatism, and generally with an uneasy, variable respiration; but when the under portion is inflamed alone, the pain is in the back, increased in like manner by pressure on the dorsal or lumbar vertebræ, and the lower extremities are affected with pains or cramps, while the urine is seldom regularly passed. So far however as my observation goes, patients most frequently complain of uneasiness throughout the whole course of the spine, when it is minutely examined by pressure; and then, pain following the spinal cord, the affection of the upper and lower extremities, the uneasy, variable state of the respiration without pain in the chest, and an uncomfortable feeling about the pit of the stomach and diaphragm, are among the principal pathognomonic signs. Yet in inflammation of the spinal cord there is very often a remarkable soreness over all or the greater part of the body, so that if the skin be any where pressed, the patient complains as much as if inflammation existed under it; but on cross-questioning, they generally refer this soreness distinctly to the integuments, and, like the fore-mentioned pains in the extremities, it is

also so much increased by motion as to make some persons cry out, and to excite a silent expression of suffering in the countenance of others. Nevertheless this soreness of the flesh sometimes exists in fever without inflammation of the medulla spinalis or its membranes; and then it is probably dependant upon the injected state of the capillary vessels accompanying the cutaneous nerves, by which their sensibility is augmented. Dr. Beddoes, in his admirable researches concerning fever, has collected some curious cases to prove, that the vascularity of the nerves is sometimes greatly increased, while he has shown, that this may be a cause of great irritation, if not occasionally of death itself. When we reflect, that a similar state of vascular injection has been found to exist in the origins of the nerves as they issue from the spinal cord, and that this state may extend to many parts of the nervous system, the remarks of Dr. Beddoes derive a more important claim to our notice with respect to the causes and concomitants of irritation.

Inflammation of the spinal cord may be acute or sub-acute, as in the brain, but the latter is much more common than the former; and it will therefore sometimes happen that the inflammation is only obscurely declared for some days, as in the following instance. My opinion was requested for a patient who had laboured under fever for several days, and whose strength seemed to be much exhausted. The respiration was short, and impeded, sometimes quick and at other times slow, and

there was an occasional gasping as if for fresh air. The countenance was anxious, but not the least uneasiness existed in the head, even when repeatedly shaken: the tunica adnata was perfectly white, and no intolerance of light or sound existed. No pain was felt in the chest, and the most forcible pressure could be borne over all parts of the abdomen without shrinking, though an oppressive feeling of weight and tightness was complained of at the pit of the stomach. There were now and then slight twichings about the muscles of the upper lip, occasionally violent pains in the upper and lower extremities, but without any uneasiness in the direction of the spine. The tongue was very foul and brownish, the lips somewhat of a leaden hue, the pulse about 130 in the minute, small, soft, but jerky, and the skin hot, and damp in some places. The patient lay on the back, rolling the head now and then on the pillow, and though motion of the extremities gave pain, yet the position of her legs and arms were frequently changed. Laxatives were prescribed with small doses of Dover's powder, but without any relief, and the next day, the patient complained of some uneasiness in the neck, which gradually extended down the greater part of the spine, while the pains of the upper and lower extremities became worse, and some tenderness supervened in the region of the liver. Blisters were repeatedly applied over the spine, and one over the region of the liver, the bowels were kept regularly soluble, and under this plan, together with an abstemious regimen, all

the symptoms of the spinal affection disappeared. Other instances equally obscure in their origin have come under my care, in which pains in the upper and lower extremities, with an irregular respiration, were for some time the only indications of the inflammation within the vertebral canal; and as these pains might be confounded with rheumatism, it may not be superfluous to mention, that they are unaccompanied with any swelling about the joints, are generally combined with more or less feeling of numbness or tingling, and often suddenly shoot from one distant part to another. Hippocrates has observed that pain in the neck is an unfavourable sign in fever: when present, for the most part, it certainly indicates an inflammatory affection of the spinal cord; and the pain in the back, which is so common in typhus is generally an indication of the same kind, when accompanied with pains in the lower extremities, and when increased by pressure on the lumbar vertebræ. Men whose sensorium is much exercised by important or anxious business are much more liable to inflammation of the brain than labouring men of the lower orders, who comparatively pass a sort of animal existence, in which the mind is little exercised; and though I do not know whether the latter be more liable than the former to inflammation of the medulla spinalis, yet it is remarkable that in my practice this affection has occurred oftenest in females.

In typhus, the lungs, and their connexions, especially in very cold or variable weather, are some-

times subject to the acute, but more frequently to the sub-acute inflammation; and as the breathing is sometimes anxious, even in the simplest cases of this fever, we ought to be the more attentive, that we may be enabled to unmask the most insidious attacks of pulmonic inflammation. When the pleura and lungs are affected with the acute species of inflammation, the local disorder is sufficiently obvious. With the ordinary symptoms of typhus, a permanent pain is then felt in some part of the chest, generally acute, though occasionally obtuse, but in either case it is much increased by deep inspiration. There is a sense of weight or constriction across the breast, the respiration is always laborious, the thorax heaves, as if under some oppressive load, and the alæ nasi are thrown into perceptible motion. The patient is extremely restless, and has a frequent troublesome cough, which augments both the pain in the side and the difficulty of respiration; most frequently he cannot breathe with any degree of ease when recumbent, but is obliged to have the trunk considerably elevated. The features altogether indicate surprise, alarm, or anxiety; the eyes seem prominent; the cheeks and lips are generally of a deeper colour than natural, yet in some cases the face has a pale, bloated appearance. The tongue is commonly foul in the middle, and of a dark red round the edges; the pulse is sometimes slow, full, and strong, but in other instances, quick, small, and weak. As in almost all local inflammations, the temperature of the skin varies considerably in the

day, and partial perspirations are not uncommon, especially when the pain of the side is acute. Several cases of typhus have occurred in my practice, with as formidable a train of symptoms as those above specified: in some of them the difficulty of breathing was at first apparently spasmodic, abating and increasing alternately, as happens in certain forms of asthma. When such an occurrence is noticed in this fever, it may be generally considered as the precursor or the concomitant of pulmonary inflammation. The practitioner, therefore, should be very cautious about the exhibition of any stimulant, such as æther, more particularly as the pulse in those examples is almost always low and oppressed. Persons subject to chronic affections of the bronchia attended with a copious expectoration are exceedingly apt, under the operation of typhous contagion, to be attacked with an acute inflammation lining the mucous membrane of those parts; and then the disorder of the chest assumes the character of peripneumonia notha, the face being pale, the lips somewhat livid, the pulse oppressed, the breathing laborious and rattling, from an accumulation of phlegm in the bronchial passages. This form of the disease is sometimes rapidly fatal, especially if it occurs in an enervated habit; and on dissection the lining of the bronchia is found highly injected, with much morbid mucus and a portion of pus in the bronchia themselves. The lungs, too, are congested in general with dark blood in some places, so that if a little be cut off,

it will sink in water, which never happens in a perfectly natural state of the lungs.

When typhus is complicated with the acute form of pulmonary inflammation, it often terminates fatally within the first nine days, and towards its close there is usually much disorder of the mental faculties. On examining the bodies of patients who died of this combination of disease, I have generally found some degree of congestion in the brain, and have seen large portions of the pleura literally coated with coagulable lymph, and considerable quantities of serum effused into the chest. In some instances the pleura alone was affected, and in others the inflammation had extended to the substance of the adjacent lung, in which there was either great congestion, a collection of pus near the surface, or an extravasation of lymph or of blood. Marks of increased action were occasionally observable on the mucous membrane of the trachea, and likewise, though rarely in comparison, on some part of the pericardium; and it may be remarked in passing, that though nosologists have pretended to distinguish inflammation of the pleura of the left side from inflammation of the pericardium, there are no signs which can be depended on as strictly diagnostic between them.

The thoracic inflammation, however, which is most frequently seen combined with typhus, assumes the sub-acute form, and apparently commences in the mucous membrane of the trachea, or in the pleura. It is to this modification of the disease that I am desirous of more particularly

directing the attention; because, as it is less calculated to strike the senses with alarm than the first mentioned, it may more easily betray the medical attendant into a false prognosis, or into an erroneous practice.

The sub-acute form of inflammation most frequently begins in the trachea like an ordinary catarrh. Then there are mostly tension and pain across the forehead; heaviness, stiffness, and slight tenderness of the eyes; flushing over the cheeks, with a deepened redness of the lips, and general fulness of the face; sense of uneasiness in some part of the trachea; huskiness, or hoarseness in the voice; uneasy respiration; and more or less constriction, weight, or soreness in the thorax. In addition to these symptoms, a frequent cough exists, which at times excites retching or vomiting, and which is at first dry, but in two or three days is attended with an expectoration of loose or viscid mucus, occasionally streaked with blood. For some days, these appearances undergo little change, and even may at last spontaneously disappear; yet most frequently the breathing daily becomes more oppressed, and the cough harder, especially at nights. Whenever the patient falls into a short sleep, the chest heaves with a more than ordinary effort, and the lips are not closed as is usual in that state; on the contrary, his mouth is considerably opened, and he breathes interruptedly, with an audible, thick, purring noise. He is generally awakened by a fit of coughing, when he usually spits up a little mucus, and continuing for some

time in a state of irritation, chiefly complains of head-ache, uneasiness in the breast, thirst, and dryness of the mouth. As the pulmonary disorder advances, the pulse is accelerated; and there are now and then rather sudden attacks of shortness of breathing, probably proceeding from an accumulation of phlegm, or from some spasm of the bronchial passages, excited by the irritation of an inflamed surface. But, independently of such attacks, the respiration by degrees grows more laborious and noisy; and obscure pain, soreness, or distress of some kind is felt in the chest, particularly on change of posture, yawning, sneezing, deep inspiration, or coughing. The system becomes more irritable, the motion of the alæ nasi greater, the state of the skin and temperature more variable, the countenance more anxious, and the lips and tongue of a more leaden colour. The head, heavy and somewhat vertiginous from the first, is at length troubled with continued delirium; and after much suffering, the patient expires, under coma, tremors, convulsions, or suffocation. The above is not an uncommon mode in which the sub-acute form of pulmonary inflammation proceeds, and it is usually protracted a little beyond the second week. But at other times it holds a different course; and when the mildness of its symptoms indicates neither immediate nor remote danger, an unexpected and often mortal change takes place, from the inflammation having suddenly increased in the trachea or its branches, or from its having extended itself to the substance of

the lungs. In three or four instances, I have seen the inflammation begin as a common cynanche tonsillaris, and after having occasioned some ulceration in the throat, spread to the wind-pipe, and produce a most alarming combination of symptoms.

In examples of the above nature, I have generally found the lining of the trachea and especially of the bronchia very vascular after death, and a considerable quantity of mucus in the bronchia, sometimes mixed with purulent matter. Occasionally the pleura and lungs have also exhibited traces of inflammation, and there has often been some congestion apparent in the brain. In typhus, preternatural accumulations of blood occasionally take place, in the capillaries of the mucous membrane of the trachea, or of the bronchia, with little or no cough for a few days; and the increased fulness is at first only indicated by a slight purring noise in the breathing, or by a little mucus or lymph being hawked up in a slight effort, either with or without some streaks of blood. Such cases should always be particularly attended to from the beginning, because the symptoms are very apt to proceed insidiously; so that life is sometimes at last endangered by an accumulation of phlegm in the bronchial passages, from a slow but progressive inflammation.

When the sub-acute form of inflammation attacks the pleura chiefly, the breathing, if narrowly watched, may be observed to become quicker and more anxious, especially in the horizontal posture.

Cough and uneasiness are almost always excited on a full inspiration; and there is, for the most part, pain or soreness in the right or left side, or under the sternum, with a feeling of weight or tightness in the breast. Most systematic writers assert, that pain is always clearly manifested when the pleura is inflamed; but I have attended some cases which proved the contrary, and the following one may be reported as a specimen. In a middle aged man, who had been infected from a mild typhus, under which his wife laboured, pectoral symptoms were developed with those of the contagious fever. During the whole of his illness, he made no complaint of pain in any part of the thorax, but simply of slight soreness, with an ill-defined uneasiness in the left side; and these were accompanied by short alternations of heat and cold, and by a frequent hard cough, which was always worse at nights. Although his breathing continued rather oppressed, and the sensorial functions were occasionally deranged, yet he had no decidedly dangerous symptoms, until about the end of the second week, when the respiration became extremely laborious, and soon afterwards he died suddenly, from apparent suffocation. On examining the body, no lesion of consequence could be discovered, except the remains of an inflammation in the left pleura, and an imposthume in the left lung, the rupture of which had been the immediate cause of death; and doubtless both the inflammation and abscess had originated in the course of the fever, as the patient had been in perfect health before he was infected.

In cases similar to this, the progress of the inflammation is of course involved in considerable obscurity. But it may, nevertheless, be traced by the continuance of uneasiness in the chest; by the increase of the cough, dyspnœa, and restlessness; by the patient panting or breathing short whenever he speaks; by the number of respirations exceeding the natural amount in a given time; by the colour of the face and lips indicating some impediment to the common changes of the blood in the lungs; and by the gradually increasing frequency of the pulse, and force of the fever. When the inflammation ends in an abscess, the uneasiness in the breast abates; but the breathing becomes more laborious, and there are chilly and hot fits, with copious sweats, and great loss of strength. The most common termination, however, in instances of this kind, is by an effusion of serum into the bag of the pleura of the right or left cavity of the thorax; and although it often protracts life, as being the substitution of a less for a greater disease, yet patients generally sink under it at last. But in every case attended with difficult respiration, there is always a danger of serous effusion into the substance of the lungs, from the violence of their own increased action.

It now and then happens in typhus, that there are sudden irregularities in the circulation of the blood in the chest, which almost as quickly recede, and are followed by similar irregularities in the head, and both may at last disappear without doing material harm. But whenever such irregularities of the circulation occur, they ought to be con-

stantly noticed, lest they should eventually become permanent, and thus injure the structure or functions of the parts affected.

Delirium is a common attendant on typhus at all times, but particularly when any part of the thorax is attacked with inflammation which, impeding the transmission of the blood through the lungs, tends to prevent its free return, by the veins, from the brain. This circumstance, together with the increased fulness of the arteries of the head, may perhaps go far to account for the frequent disturbance of the sensorium in such cases; but it is not improbable, that the delirium may sometimes in part depend on those inexplicable sympathies which exist in the nervous system. The ancients, influenced by speculative opinions about the seat of the soul, used much more frequently than the moderns to refer delirium to the diaphragmatic and pericardiac regions. Certain it is, that I have met with some cases accompanied by great intellectual derangement from the beginning, in which the minutest dissection after death could detect no vestige of cerebral disease; though in all an effusion of serous fluid was found in the pericardium, with some appearance of inflammation on its surface, and on that part of the pleura which covers the diaphragm.

Four instances of contagious fever have come under my care, in which the mucous membrane of the trachea appeared to be chronically inflamed, the disease in all of them continuing from two to three months. Nothing very remarkable occurred

for the first six or seven days of the attack in these cases, except that there were occasional heats and chills, unusual prostration of strength, heaviness as well as great uneasiness in the head, and an uncommon irritability of the stomach. After this period, the respiration grew more hurried, and a troublesome cough arose, which much augmented the head-ache and sickness. For several days the cough remained dry, but it afterwards became moist; the sputa at first rather resembling the white of an egg, but finally appearing more viscid and opaque. The pulse throughout was feeble and quick, the tongue foul, the heat variable, the bowels irregular; and although the patients frequently appeared drowsy, for the most part they obtained very little sleep. In two of the persons thus affected, the complaint continued nine weeks, and although it assumed a consumptive character before death, the signs of genuine typhus could easily be recognized to the last. After having produced an extraordinary degree of suffering, the other two cases ended favourably, but the convalescents were long in an emaciated and enfeebled state; an abatement of the vomiting, some desire for light food, and a tendency to quiet sleep being for some time the only appearances which augured recovery. An esteemed professional friend, Mr. Croudace of Bishopwearmouth, once nearly fell a victim to this rare modification of the disease, which in him from first to last continued about three months; and as a most decisive proof of its peculiar nature, he infected at a late period of its

progress a younger brother, who then waited almost constantly upon him, with a simple and unequivocal typhus. Not having had an opportunity of ascertaining the morbid appearances after death in any instance of this form of typhus, I cannot speak positively as to the real character of the pectoral affection, but it most probably consists in a species of chronic inflammation of the trachea; and I am the more confirmed in this opinion, because it is that formed by Mr. Croudace, from repeated reflections upon his own sufferings.

The same distinction, which has been made with respect to the cerebral and thoracic inflammations, may be applied with equal correctness to those which not unfrequently attack the abdominal cavity in typhus, for they are also of an acute or subacute form, and shall now be concisely exemplified. Though I have attended several typhous cases, in which abdominal inflammation existed, the symptoms have seldom been sufficiently distinct and defined to enable me to point out the precise seat of the inflammation. In fact, this cannot be so readily accomplished as some have imagined, because gastritis, enteritis, and the like affections of the belly, have many signs in common, and because the inflammation is most frequently not confined to one part, but extends to others; a circumstance which most practical writers have not sufficiently regarded, in their descriptions even of simple acute inflammations of the abdomen. It is easy in the closet to draw minute lines of distinction between inflammations situated in the various

textures and organs of the same cavity ; but at the bed-side such distinctions will often be found embarrassing or useless. For practical purposes, it is generally enough to know, that internal inflammation does actually exist, since, wherever seated, the same or similar principles of treatment must be adopted. If indeed one region should seem to be more especially affected, it is only right that the attention should be carefully directed to that quarter ; but at the same time it ought not to be withdrawn from adjacent and even distant parts, for pathological views of fever cannot be correct, without being comprehensive. In adverting, therefore, to the abdominal inflammation of typhus, it is not my wish to divide them with systematic particularity and precision, but rather to describe them as they have been presented in cases which occurred in my own practice.

It has just been noticed, that inflammation attacks the mucous tissue of the trachea and bronchia in typhus, and the same tissue of the stomach, intestines, and bladder is liable to be simultaneously or separately the seat of inflammation. In many cases of an ordinary catarrh, the mucous membrane of the nostrils, of the tongue, of the fauces, and of the respiratory passages is more or less continuously disordered. If we extend our observations further, we shall find, that the mucous membrane of the eyes, of the frontal sinuses, and even of the stomach, bowels, and bladder is in some degree implicated ; as the watery appearance of the eyes, the uneasiness over the forehead,

the prostration of appetite, the vitiated secretions of the intestines, and the mucous cloud or sediment in the urine seem clearly to indicate. But it is especially in those diseases which bear the character of contagion, that the mucous membranes are apt to be so remarkably affected; and hence in the scarlet fever, in the measles, in the hooping cough, and in typhus, the condition of this tissue deserves particular consideration. The disturbance in the circulation of the mucous membranes of the stomach or intestines does not amount to inflammation in the mildest modifications of typhus, and is probably similar to that which we observe on the tongue or fauces; but in the more complicated examples, it often passes on to inflammation, and either exhausts the patient by its continuance, or terminates in ulceration or gangrene, as I have asertained by dissections. One of the best parts in the nosology of Cullen, and one which has been most overlooked, is that where he has pointed out a species of inflammation which attacks the lining of the stomach and bowels; for it is only of late years that our attention has been sufficiently fixed on the morbid affections of mucous membranes, and that chiefly by the researches of Bichat, whose productions and death verify the remark of Bacon, that a man may be young in years, but old in hours.*

When an acute inflammation invades the lining

* An ingenious and able French writer, Broussais, it appears has lately published a work, which I regret not to have seen, where the morbid affections of mucous membranes are particularly considered.

of the stomach or bowels in typhus it is generally denoted by some degree of pain and tenderness, by the stools containing unnatural mucus, or coagulable lymph with or without some admixture of blood, by unusual flatulence, by a short hurried respiration, by an anxious countenance under pressure of the affected region, by great prostration of strength, by a small quick pulse, and by the patient lying prostrate on the back, with the knees mostly elevated and the feet drawn upwards. If this acute inflammation be in the interior of the stomach, or of the upper portion of the intestines, nausea, retching or vomiting is generally present, with a sense of heat, and an intense desire for cold drinks; but if the inflammation be seated in some inferior portion of the gut, and particularly in the colon, these symptoms may all be absent. Even in this kind of inflammation, patients are now and then easy when they lie perfectly still, and only complain of pain when pressure is applied, or when they move, as in geting up, for example, to evacuate the bowels. It is, I know, the opinion of some distinguished pathologists, that inflammation of the lining of the stomach and bowels cannot exist without some permanent pain and tenderness. But this opinion is erroneous. Several instances have come under my care where the sub-acute species of inflammation commenced and proceeded in typhus, without pain or tenderness; and though in some of them ulceration was finally produced, yet they were only characterised in their course by a sense of

fulness, and flatulence of the belly, by fluid, slimy, acrid stools, by a hollow appearance about the eyes, by an increasing depression of muscular power, and by the supine position of the body. When inflammation attacks the mucous membrane of the bronchia it not unfrequently advances to a fatal termination without pain, which shows the naturally low sensibility of the part; and a like observation might be justly made in many cases, in reference to the mucous membrane of the intestinal canal, particularly when the brain is embarrassed in typhus. Towards the conclusion, considerable quantities of blood are sometimes passed by the rectum, which rapidly sink the strength; and in such instances the villous coat will commonly be found much injected, though at the same time it ought to be remarked, that similar eruptions may proceed from the liver, as my friend Dr. Ayre has ably illustrated, in his work on marasmus. When the bowels are apparently lax nearly from the commencement of typhus, on cautious inquiry, it will generally be found, that the bile is secreted in unusual quantity or quality, that some irritating scybala are retained in the colon, or that there is a degree of inflammation in some part of the villous coat of the bowels. Indeed wherever the stools are small, frequent, and mixed with considerable portions of glary mucus, or copiously liquid and oily like thin paint, and in either case accompanied with tenesmus or griping, the practitioner has cause to dread inflammation, even if pain and tenderness should

be absent. The tongue is variously affected in disorders of the mucous membrane of the bowels. In some of those irritations, which hardly deserve the name of inflammation, it is of a light or deep red round the edges, but it is generally foul in the middle, the thirst is always urgent, and eructations of wind are not uncommon. Whenever the tongue is observed to be of a blood red, the mind should be particularly turned to the stomach and intestines; for though this often exists without actual inflammation, yet it generally indicates some degree of gastric or intestinal irritation, which may be converted into inflammation. Small or considerable portions of the mucous tissue may be inflamed at the same time, but it generally happens, that the secretions of most are vitiated; and this circumstance has led some to suppose, that there is a sort of continuous sympathy between mucous membranes, by which a disturbance in the functions of one is apt to involve the rest. If the mucous membrane of the bladder should be inflamed, it will in general be denoted by pain in the region of that organ, and by a frequent desire to pass the urine, which is then commonly loaded with the morbid secretion of its interior surface; and as previous retention of urine is sometimes the occasion of such an attack, in all cases of fever the practitioner should make a point of ascertaining whether the patient be sufficiently relieved every day. Inflammation of the mucous membrane is sometimes combined with a similar affection of the peritoneal covering of the stomach

and intestines: but it more frequently happens, that inflammation exists in some part of the peritoneal coat, while the mucous tissue is merely in a state of simple excitement; nor will it be always so easy as might appear in books to say, at the bedside, when the mucous, and when the serous membrane only is inflamed, as some of the symptoms are common.

If acute inflammation be seated in the peritoneal covering of the stomach or intestines, there are mostly deep continual pain, and soreness of the integuments increased on pressure; retching, vomiting, or anorexia; desire for cold acidulous drinks; short, quick, respiration; fulness as well as flatulence of the bowels; considerable prostration of strength; restlessness, and anxiety. The patient almost invariably lies upon his back, frequently tossing the arms about, moving the feet, or changing the position of the head. If desired to turn upon his side, it gives him considerable uneasiness in the abdomen; and if suddenly raised into the upright posture, he generally begins to eruct, retch, or vomit. The pulse is small, and sharp, and in some cases very quick, and in others below a hundred in the minute;* the tongue foul in the centre; the mouth clammy; the taste vitiated; the bowels are for the most part bound; the lips parched; and the countenance expressive

* In some very violent instances of inflammation of the stomach, attended with great pain, I have known the pulse not exceed eighty in the minute; but it invariably became much quicker on copious venesection, and continued so for a considerable time afterwards, even during convalescence.

of much distress. The pain of the belly is augmented by yawning, by coughing, or by drawing the breath deeply down, and sometimes even by the blandest liquids, which are usually rejected, unless taken in small quantities at once. If the pain be acute, the skin is often of a pungent heat about the breast and abdomen; while the forehead and face, exposed to the atmosphere, are sometimes damp, and even cold, the partial diminution of the temperature on these parts being occasioned by the evaporation of the perspirable matter. It may not be unimportant to remember this partial coldness, as I have known it mistaken for an indication of gangrene, when the inflammation had not actually reached its acmé. During the advancement of the abdominal affection, the pulse generally grows smaller and quicker, the nausea on vomiting more urgent, the belly rounder and more swollen; the thirst, sense of internal heat, flatulence, and restlessness being likewise all aggravated. Upon the approach of suppuration, of effusion, or of gangrene, there are rigors or slight chilly fits, with so much abatement of pain, that an unexperienced observer might be induced to give a favourable prognosis: but an universal collapse quickly supervenes, attended by cold, copious, clammy perspirations; quick, short, agitated breathing; a hurried, undulating pulse; frequent, dark, loose stools; and often incessant vomiting. Yet inflammation of some of the abdominal viscera, especially of the stomach or bowels, frequently terminates fatally before it has advanced into actual gangrene, the patient finally

sinking under the accumulated force of exhaustion and of irritation.

The symptoms of gastritis and enteritis have been described together, because my own observations have not furnished me with the means of unequivocally discriminating these disorders. But it may be generally affirmed, that in the beginning of gastritis, vomiting immediately occurs on the blandest liquid being received into the stomach; whereas in the beginning of enteritis, it is well known that vomiting mostly does not occur until the fluid has remained some time on the stomach. In the advanced stages, however, of both these affections, the stomach is usually alike irritable. Though gastritis does not so often take place as enteritis, I cannot think it so rare an occurrence as some have confidently asserted. Morbid dissections have fully satisfied me, that the seat of the pain is sometimes in the bowels, when the inflammation is confined to the stomach, and *vice versâ*. This fact surely proves the futility of trusting to the common nosological definitions. In two cases of typhus which occurred in my practice, the pain was so frequently referred to the vicinity of the heart, and the pulse so very irregular throughout, that carditis might have been readily suspected; but on examining the bodies after death, I discovered that the stomach was the chief seat of the inflammation, the heart and its appendages being quite free from disease. In both these instances there was a distressing vomiting, and also a sense of burning heat at the

stomach, which are two of the best diagnostics of gastritis.

If the covering or parenchyma of the liver be attacked with inflammation in typhus, giddiness, load about the breast, and sickness, are often among the primary symptoms; and the patient, complaining of pain and soreness, with weight about the right hypochondrium, can neither bear pressure in that place, nor lie upon the left side, without an increase of pain. When the convex surface of the liver is the seat of the inflammation, it is sometimes not very easy to distinguish the hepatic affection from pleuritis: but in the former, uneasiness is excited by pressing the hand under and above the false ribs, and there is generally some pain at the top of the shoulder, circumstances not commonly observable in inflammation of the pleura; and further, the cough and dyspnœa are not so distressing as in the latter, while the abdominal secretions, especially those of the liver, are much more vitiated. The cough is for the most part dry, but sometimes humid, and frequently excites a pungent pain in the part affected, with a tendency to nausea, retching, or vomiting. The spirits and strength are much depressed; the mind is apprehensive, confused, or slightly delirious; the pulse quick and tensive, or low, changeable, and oppressed; the breathing anxious and variable; the tongue covered with a dirty white, yellowish, or brownish fur; the urine scanty and deep coloured; the bowels are generally irregular; and the feces dark, slimy, varied,

and mixed with morbid bile. The heat of the skin, though sometimes only a little, is at other times much above the standard of health; yet, according to my observations, it is not very often jaundiced in the genuine typhus. In the few instances of this description, which have appeared in my practice, as the yellowness was diffused over the cuticle, the pulse grew slower, and the temperature declined; but these were utterly fallacious indications, whenever vomiting, with a burning heat about the præcordia, and sinking of the strength supervened. In two unfortunate cases, from the commencement of which there were strong symptoms of hepatitis, and the skin towards the conclusion became tinged with bile, on dissection no marks of inflammation were found in the liver. It is perhaps not improbable, that this viscus and other important parts occasionally lose their vitality from inflammation, and yet on examination exhibit no signs of their previous excitement, all trace of that having passed away before death, by an excess of morbid secretion. A faint yellow or lemon tint of the skin sometimes accompanies an excessive relaxation of the system in the last stage of typhus; and this is generally a mortal symptom, whereas from mere jaundice no additional danger is to be apprehended, if the other indications be good. When this lemon tint occurs, the urine is commonly pale and thin, and the evacuations do not show any decided affection of the liver; but in the true jaundiced skin, the urine is usually as deep and dark coloured as

porter, while the stools are almost always somewhat like ordinary pipe-clay.

In the course of the abdominal inflammations combined with typhus, the sensorium is often very much disturbed, which is rarely the case in simple inflammations of the belly. Delirium, as before remarked, is one of the most ordinary symptoms of typhus under all its modifications; but, singly considered, it is by no means conclusive as to the real state of the brain or its appendages. An opinion, therefore, ought never to be formed from it alone, but, like the pulse, it should always be taken in conjunction with all the material circumstances of the case. It is only by such a mode of proceeding, that we can satisfactorily ascertain whether the delirium in any instance originates in the brain itself, or whether it is the product of mere nervous sympathy, or of arterial excitement from some distant irritation.

When other parts, than those above specified, are inflamed in typhus, a reference to the place of the pain, to the concomitant symptoms, and to the functions most decidedly disordered, may lead to the seat of the inflammation. Yet, as formerly hinted, however circumscribed the inflammatory action may be in the first instance, it often so speedily implicates the neighbouring parts, that it becomes no easy matter to decide precisely where it has commenced, or where it may terminate. Instead, therefore, of being able positively to point out its site and extent, the candid practitioner can often only express himself

assured of its existence; in this respect resembling the mechanician, who knows when a complicated piece of machinery is going improperly from the nature of its motion; though he cannot always specify, by a mere external inspection, the part which is more especially deranged. Morgagni, Van Swieten, De Haen, Pringle, and others, have recorded examples in which different viscera of the abdomen were inflamed without the least degree of pain. It must however be acknowledged, that such occurrences are not common, yet the certainty that they do sometimes exist, should make us most circumspect in our general conduct, particularly as it relates to contagious fevers, in which the visceral inflammations are often more than usually insidious, from the changes which occur in the nervous system.

The sub-acute form of inflammation not unfrequently exists in the abdominal viscera, and is attended with much less striking symptoms than the acute form, as the two following cases will testify. Some time ago, an aged person laboured under typhus, whose bowels had been greatly neglected throughout the disease, but as he had never made any complaint of fixed permanent pain, the existence of abdominal inflammation had not been suspected. At the expiration of the first week of the fever, after a strong shivering fit, succeeded by a cold clamminess of the skin, and an almost continual vomiting of a darkish fluid, he expired suddenly in convulsions; and on examining the body, unequivocal proofs of inflammation and gangrene were found in the small

and large intestines. Another patient, at an advanced period of life, had an attack of typhus, and with the ordinary symptoms, solids and liquids were rejected almost immediately after they were taken: there was also a constant sense of a burning heat and load at the stomach, accompanied with foulness of the tongue; small, oppressed pulse; tenderness of the abdomen on forcible pressure; and an extraordinary prostration of strength. The saline effervescing draughts were tried without the least relief; but under the impression, that a hidden inflammation was existing somewhere in the abdomen, about nine ounces of blood were abstracted, the crassamentum of which was very cupped and buffy. Still, however, the burning heat and vomiting continued, and they were not removed until eight additional ounces of blood were drawn from the arm, and the patient had been frequently purged, and even blistered over the surface of the epigastric region.

In several instances of the inflammatory typhus, I have known patients so little incommoded for some time by the pain of the abdomen, as hardly to complain of it when they lay perfectly still in a particular posture; and it only became uncomfortable to them when pressure was applied, or when they were desired to move, cough, or take a full respiration. Yet, in general, some feeling of pain, with chilliness, and an increased velocity of the pulse, indicate the approach even of the sub-acute form of inflammation in the belly. At times, too, the pain is distinctly felt, and referred to particular regions; and when it suffers remis-

sion, which is not unfrequently the case, tenderness of the integuments, and internal uneasiness may still be detected by pressure. In the liver, spleen, and kidneys, the inflammatory action may remain latent the longest, and only fully develope itself after a continuance of several days. But the existence of the sub-acute inflammation in any part of the belly may be inferred in typhus, when, after the supervention of the stage of excitement, the stomach remains uncommonly irritable; when there are constant feelings of weight or uneasiness about the scrobiculus cordis; quickened and anxious respiration; small, and rapid pulse; indistinct chills and heats; dry or foul tongue, with great thirst; watchfulness and jactitation; frequent eructations; sense of internal heat; soreness, or pain on pressure in some particular part; and an unusual quantity of dark, thick, fluid matter in the stools, on the operation of a purgative. The progress, likewise, of such affections may be traced by a variety of symptoms, even when pain is not very conspicuous. As the inflammation advances, the nausea or vomiting grows more urgent; the pulse smaller; the respiration shorter and more uneasy; the thirst more intense; the belly rounder and fuller; the eructations more frequent; the face paler; the restlessness greater; and the condition of the temperature and skin more variable. Hippocrates attended most minutely to the respiration in diseases, so that the state of this function was to him what the state of the pulse is to us, a criterion or a

guide as to the nature and diagnosis of diseases. Now in all abdominal inflammations, the breathing is much disturbed, and this is a circumstance which ought never to be forgotten.

There is often a striking change in the countenance of persons affected with visceral inflammations of an obscure nature, by which I have been partly led to the eventual discovery of the latent mischief, even when the patients themselves were lulled into a confident hope, that all cause of apprehension was past. This peculiarity in the countenance is varied in different examples, and even in different stages of the same case: it may be an expression of suspicion, alarm and anxiety, dejection and peevishness, or confidence and apathy, often accompanied at last with a hollowness and livor about the eyes. But occasionally the countenance undergoes little change for some time, and the pain of the belly, which at first is often so indistinct, as to require cross-questioning to ascertain it, gradually becomes more manifest, whilst the abdomen grows more distended, and the pulse more frequent. In such examples it is not until the symptoms have reached this crisis, that any very material change of countenance can be remarked, which, however, when it once takes place, hardly ever quits the patient but with the disease. Yet after all, one of the best methods of finding out obscure abdominal inflammations is forcible pressure over the bowels, which indeed ought never to be neglected as a test. When the hand is pressed on any inflamed part, pain is often

excited, which would otherwise scarcely be felt at all. We might adduce several illustrations of this, in certain species of external inflammations, but perhaps one may be deemed sufficient. In the inflammations to which the feet and hands are liable, sometimes little or no pain is felt in the part affected, while the limb is laid at rest in a certain position, but no sooner is it pressed upon and moved, than the pain becomes urgent. Something similar to this may often be observed in the sub-acute form of the abdominal inflammation, and therefore both pressure and motion are excellent expedients in the diagnosis. It is not, however, within the limits of my present knowledge to point out all the different modes, in which the sub-acute inflammations of the abdominal viscera come on and advance in typhus; but it is hoped, that the few foregoing hints will not prove wholly useless, as a faint light to others who may hereafter explore this obscure department of the subject. Many cases of typhus, commonly supposed to be fatal from mere debility, really derive their mortal character from some undiscovered or neglected abdominal inflammation, but especially of the mucous membrane of the intestines.

It has been previously mentioned, when the spinal cord is inflamed, or when the cutaneous nerves are particularly excited, that there is a peculiar tenderness or soreness of the surface; and as it is sometimes much greater in one part than another, it is of consequence to bear its true cha-

racter in mind, lest it should be mistaken for a sign of abdominal inflammation. In this peculiar affection of the integuments, when abdominal inflammation is absent, if the hand be suddenly and lightly pressed upon the belly, the patient will shrink and the countenance become anxious, as may be observed from pressure while the viscera within are inflamed; but, contrary to what happens in abdominal inflammation, if the hand be cautiously, gradually, and at last forcibly pressed upon the belly, the tenderness or soreness of that part is generally lessened or removed for the time. Besides, other places of the body will be tender in this cutaneous affection, so that if sudden pressure be made upon the chest, arms, thighs, or legs, some of them will be equally sore; and on cross-questioning, too, this soreness, wherever seated, will be distinctly referred to the flesh, and on the whole have a less permanent character than that attendant on abdominal inflammation, being now most acute in one, and then in another part of the surface. Yet as abdominal inflammation may be co-existent with this peculiar affection in the skin, we should always be sure to ascertain whether the pathognomonic signs of the former be absent or present; and where the diagnosis is doubtful, it will be safest to proceed as if abdominal inflammation existed, provided the practitioner be consulted at an early period of the fever.

In the preceding observations, the cerebral, thoracic, and abdominal inflammations have been considered in their proper order; but it must not,

therefore, be inferred, that inflammation is always entirely limited to the head, to the chest, or to the belly. The truth is, that it may exist separately in each or combinedly in all of those regions, though one part is generally most decidedly affected. When one organ bears the burthen of the inflammation, the patient stands an infinitely better chance of recovery than when many organs are inflamed at the same time; indeed I have seen very few patients recover in typhus where the viscera of the head, chest, and belly have been simultaneously affected. It will appear from what has been said, that the mucous, the serous membranes, and the parenchematous substance of various parts are the common and respective seats of inflammation in typhous fever; but the muscular fibres of the bowels and of the heart are sometimes liable to be attacked, and this is especially the case when rheumatism supervenes, which in typhus always makes a most formidable complication of disease. The character, then, of the inflammatory form of fever must be exceedingly diversified, according to the structure and functions of the part which may happen to be inflamed; but still the genuine signs of inflammation mark it as one affection, however it may be modified from the peculiarities of its local situation. If any man ignorant of modern pathology, beholding one patient labouring under inflammation of the brain, a second under inflammation of the lungs, and a third under inflammation of the bowels, were told that the

disease in all was essentially the same, he would doubtless be surprised; yet this would be as legitimate a generalization as any in physic, and for want of having made it, most authors, like the illustrious Sydenham, have erroneously considered many fevers so various and so uncertain as to be reducible to no definite character. The above descriptions and remarks on the inflammatory forms of typhus, might serve to illustrate many other affections, proceeding from different causes; but in the sequel of this work I shall briefly advert to some of these, and for the present pursue the history of typhus, that all its principal varieties may be fully exemplified.

THE CONGESTIVE TYPHUS.

Some descriptions of what I mean to denominate the congestive forms of fever, may be found in the ancient records of physic, especially in those of Hippocrates, for in the *lipyria* and *epiala*, there seems to have been internal accumulations of venous blood, without the increased excitement which designates the *causus* or burning fever; and in speaking of the rise of a new fever, Sydenham hints at one in which the surface was cool, and nature so much oppressed and overcome by the first attack as not to be able to raise regular symptoms, because, he adds, the vessels were so full as to obstruct the motion of the blood.* Dr.

* The entire works of Dr. Thomas Sydenham, newly made into English from the originals. Third edition, p. 570. London, M.DCC.LIII.

John Clarke and some others, too, have given some histories of fevers which appear to have been congestive, yet so far as I know Dr. Robert Jackson has indisputably the merit of having surpassed his predecessors in the distinctness and fidelity, with which he has described the symptoms. But whilst thus paying a just tribute of praise to this indefatigable physician, it is my design to adduce the results of my own observation and experience, since I have only been able to find obscure hints in the writings of others respecting the pathology of this variety of fever; and if I should be so fortunate as to succeed in removing any part of the obscurity, which has hitherto caused doubt and indecision as to the true nature and best treatment of congestive disease, the road to a more extended inquiry hereafter will be made more safe and accessible.

One of the most remarkable cases of the congestive typhus which I ever witnessed, occurred many years ago in a slender young man, who had travelled several miles to see a relative sick of that fever, with whom he remained, and upon whom he attended several days. On returning home, he was suddenly attacked with vertigo, chillness, sickness, and extreme weakness of the lower extremities; and when he reached his own house he appeared most strangely confused in his head and intellect, staggering and talking like one intoxicated. He was immediately put to bed, and did not complain much afterwards, but gradually fell into a profound coma, in which he lay without

motion at my first visit. The face was then pale and somewhat livid; the breathing deep and impeded; the pulse small, frequent, and irregular; the tongue white, and covered with a slimy saliva; the skin dingy and partially damp, the heat of which felt nearly natural over the breast and belly, but the extremities were rather cold. The head was shaved and blistered without loss of time, mustard sinapisms were applied to the feet, and large cathartic injections repeatedly administered. In about twelve hours, when the bowels had been often and copiously moved, the patient gave some indications of returning sensibility; and in a few hours more, looked up, and even recognized some intimate friends, who were present, but spoke in a feeble and faultering accent. For several hours there was an appearance of improvement in some particulars; his pulse and breathing became freer, his voice more natural, and his skin of a warmer glow; but in contravention to these favourable symptoms, his hands were tremulous, his tongue fouler, and there were a few dark petechiæ scattered over the trunk and arms. Moderate portions of wine were now recommended at short intervals, with a view to support his strength; but the debility increased under this plan, and he again sunk into a deep stupor, in which he expired, slightly convulsed, about forty hours from the first attack.

Some months after the occurrence of the above, another and similar example came under my inspection. The subject of it was an aged, but

robust man, who, having been exposed to contagion, at first became pale and languid, and who finally was afflicted with vertigo and dimness of sight; deep stunning pain of the head; confusion of mind; sense of stricture in the chest; and oppression of the præcordia. The countenance had a vacant and intoxicated expression; the tongue was white in the middle, smooth and moist. No material augmentation of the temperature existed; the skin was dry on the trunk, and damp on the forehead and extremities; the pulse underwent little change, except that it was somewhat more frequent, and less resisting than usual. The patient seemed restless for some hours, but like one yielding to excessive fatigue, or to inebriety, he sunk into an appearance of imperfect sleep, attended with slight startings of the tendons and heavy respiration. In this state, blisters were applied to the head and chest, sinapisms to the feet, and in conjunction with enemeta, purgatives were administered; as upon trial it was found that liquids could be swallowed, although with difficulty. After the bowels had been evacuated of much dark feces and bile, the stupor, as in the former instance, gradually disappeared, and some partial efforts of excitement succeeded. Still, however, there existed obvious disorder of the sensorium, evinced by a stupid fatuous stare; a slow, drawling mode of speaking, and much intellectual confusion. By degrees some petechiæ came out on different parts of the body, and the tongue grew foul and brown, the breathing laborious, the skin

rather greasy as well as cool, and the pulse considerably weaker and more rapid. Wine, cordials, and laxative medicines were now the principal means employed, but they proved completely inefficient. On the third morning of the disease, immediately after a dark liquid stool, a general shivering supervened, like the cold fit of an ague, and life was soon terminated, by successive attacks of strong convulsions. Permission was obtained to inspect the body, in this interesting case. The derangements in the head were nearly analogous to those which are often exhibited after the fatal issue of apoplexy. On laying back the dura mater, the vessels could be seen loaded with blood along the convolutions of the brain; and on deeper examination, the whole cerebral substance was found preternaturally turgid, with some bloody serum in the lateral ventricles. The liver and spleen were likewise greatly distended with grumous blood, and the lungs had a gangrenous appearance in some places.

Another case of congestive typhus, which I attended some years ago, did not accord in many points with either of those above reported. It took place in an adult, on the ninth day from the period of infection, on the morning of which he was so well as to join in active amusements with some acquaintances; but he felt oppressed and sick in the course of the day, and went to bed in the evening, with the hope of relieving himself from the indisposition which had come so unexpectedly over him. About three hours having

been passed in a sort of disturbed slumber, he awoke with a rending pain in the temples; peculiar heaviness, noise, and swimming in the head; some indistinctness of mind; involuntary sighing; and sensations of weight and distress at the pit of the stomach. The countenance soon acquired a look of extreme agitation; the skin was dry on the trunk, and damp on the extremities; the centre of the tongue white, but moist; and evidences of irregular excitement gradually developed themselves; the pulse being small and hurried, the heat sharp and concentrated about the præcordia, but lower than natural on the wrists, ankles, forehead, and lobes of the ears. Pretty large doses of strong cathartic medicines were exhibited through the night, but without effect. Early on the following morning delirium occurred, attended by spasmodic twitchings of the face, small rapid pulse, and a bloated countenance. The excitement still remained unequal, the surface being hot in some parts, while it was cold in others; and the raving continued without intermission until the ensuing night, when he grew much quieter. After having lain some time in an apparent stupor, occasionally broken by sudden startings and shrieks, he was seized with strong convulsions, and died soon afterwards. Although the general aspect of this case did not correspond with that of the two forementioned, yet on dissection the morbid appearances were not very dissimilar; for the brain, liver, and spleen were the parts chiefly engorged with blood, the two latter

organs being ruptured by foreible pressure of the hand.

A gentleman of active habits, who had imprudently exposed himself to the contagion of typhus, felt uncomfortable some days afterwards; and though he could not command his attention as usual, he was able to take moderate exercise. One morning while walking in the strects, he was seized with vertigo, and dimness of sight, and reeled in sueh a manner, as to induee some persons, who happened to be near him, to suppose that he was drunk. After having been assisted home, he seemed to be distinetly threatened with apoplexy, and on that aecount a vein was opened at the arm. The blood merely trickled from the orifice for several minutes, at length, however, it gushed in a full stream, and about sixteen or eighteen ounces were abstraeted, with evident relief of some of the more urgent symptoms. The patient was immersed to the middle in a warm bath, and bland, tepid liquids were afterwards given, followed up by the exhibition of brisk catharties and stimulating injections, which operated powerfully in a few hours. The disorder soon clearly revealed itself, having all the marks of a genuine typhus; but in this instance, a perseverance in purgatives, the semicupium, and warm diluents, soon effected a eure.

The eases above cited may be viewed, so far as my observation goes, as tolerably fair examples of the more violent forms of the eongestive typhus, in which, different from what is observed in the

simple and inflammatory typhus, the stage of excitement, without the interference of art, never emerges at all, or only does so very imperfectly; the energies of the system being either nearly extinguished by the venous congestions, or so much oppressed, as to be unable to create an universal excitement. Sometimes however patients do not rapidly sink under the first shock of the attack, but that being passed over they linger for many days in a state of stupor or mental indifference, and die at last with a foul dark tongue, shrivelled cool skin, and deep sunken countenance. The open forms of fever, in which heat and arterial re-action are equably developed, will be found the least dangerous; and those of an obscure nature, in which neither heat nor arterial re-action are equably developed, the most perilous and unmanageable. In congestive cases, the local accumulations of blood in the veins obstruct from the beginning the common series of febrile phenomena, and there is in consequence either a total want of morbid heat, or a concentration of it in some particular parts of the body, whilst others are considerably beneath the natural temperature. It is the entire absence or the partial presence of excitement, which constitutes the chief external distinction between the severest forms of the congestive typhus; as they all coincide in oppressing the functions, or in deranging the structure of some important organ, by an almost stagnant accumulation of blood in some part of the venous system.

The attacks of the most dangerous forms of the congestive typhus are generally sudden, and marked by many remarkable symptoms:—an overpowering lassitude; feebleness of the lower limbs; deep pain, giddiness, or sense of weight in the encephalon; a dingy pallidness of the face; anxious breathing; damp relaxed, or dry withered skin; and those peculiar conditions of the temperature which have been noticed above. The pulse is low, struggling, and variable; the stomach irritable; frequently there is an inability from the first to hold up the head; and the mind is more often affected with dulness, apprehension, or confusion, than with delirium. The whole appearance of the sick impresses the attentive practitioner with the idea, that the system in general, and the brain in particular, are oppressed by some extraordinary load. Both the manner and look of the patients undergo early and great alterations: sometimes they slowly drawl out their words, or utter them in a hasty and yet imperfect mode like people who slightly stammer when embarrassed; they not unfrequently seem as if stunned by a blow, half-drunk, or lost in a reverie; and at times have the bewildered aspect of persons suffering under the first shock of an overwhelming misfortune. The eye is occasionally glary and vacant, without redness; but at other times it is heavy, watery, and streaked with blood, as if from intoxication, or want of sleep. At the commencement the pulse is often less altered as to frequency than might reasonably be expected, yet in general it

becomes very rapid towards the close; the tongue is usually little altered in the first stage, but in the last it is frequently rough, foul, and brown; the bowels are mostly very torpid in the beginning, and the stools procured dark and scanty; whereas, in the advanced stage, the bowels are generally loose, and the stools copious and involuntary. Eructations are not uncommon at all times, and the epigastric region is often much inflated. On account of the general torpor, the secretions are diminished or suppressed; and, as justly remarked by Dr. Robert Jackson, the skin is often in that peculiar state, that if blisters be applied, they either do not act at all, or so defectively, as to leave an appearance as if the part had been slightly seared by a heated iron. Petechiæ in general appear earlier in these than in any other varieties of typhus; and in the last stage there are sometimes gangrenous spots on the extremities, oozings of blood from the mouth and nostrils, and hemorrhage from the bowels.

There are conditions of the sensorium, voluntary powers, and præcordia, no less than of the respiration, pulse, and skin, which mark the progress or decline of such affections with the greatest certainty. If the stupor or delirium continue to increase with an augmentation of the oppression, if the respiration become more anxious, the pulse weaker and quicker, the skin colder, as well as more flaccid, and especially if the stools or urine be passed insensibly, the case will almost invariably terminate mortally. But, on the other hand, if

the stupor or delirium should disappear, while the oppression obviously abates, and the respiration becomes easy, the pulse full and regular, with an universally warm skin, a favourable prognosis may generally be given. The abatement, however, of the delirium or stupor, unaccompanied with the other favourable signs enumerated, is not at all to be depended on; for patients sometimes become rational and collected a few hours before death, and that even when the brain is in a state of irretrievable disease, as the two cases and dissections before given may serve to illustrate. It must always be recollected, that in examples of congestive fever, there is a singular disposition to relapse; so that a patient may grow very suddenly and seriously worse, when all the previous symptoms might have led us to form a sanguine opinion. The consideration of this truth should make us pause before we give our prognosis, or at least teach us that, in the severer modifications of congestive fever, the patient is not always perfectly safe, until he is perfectly recovered.

There are comparatively milder forms of the congestive typhus, in some of which the patient walks about for a few days after the infection has begun to operate, and complains little, except of uneasiness of the head, loss of appetite, and languor, appearing rather paler than when in health. If strictly attended to, however, by a medical observer, a change may usually be remarked in his whole demeanour; he cannot so steadily command his attention as before, is not

only restless during the day, but watchful at nights, and soon betrays an absence of mind or loss of memory. At length he becomes garrulous like a half drunken person, or talks inconsistently with his former views and character; after the lapse of another day or two, the mental confusion is most obvious to every one, he begins to be unsteady in his gait, and has a heavy intoxicated cast of the countenance. If carefully examined at this period, his tongue will be found white, his pulse small, quick, and perhaps irregular; his breathing hurried; his bowels slow; his skin rather hot about the trunk, but coolish and damp on the extremities. If the disease be allowed to proceed, without decided interruption, the hands shortly become very tremulous, and the confusion of mind passes into delirium; yet there is still a want of regular excitement, demonstrated by the alternate flushing and paleness of the face, the feebleness of the pulse, the unequal state of the whole circulation, the coolness of the extremities, the partially concentrated heat of the trunk, and the laxity of the skin. Aural and visual deceptions succeed, and force the patient into violent exertions, and every attempt to overpower him by coercion tends to aggravate the delirium, and sink the strength. His tongue grows daily fouler, and his debility greater; he begins to pick the bed clothes, and at last petechiæ and subsultus tendinum appear. About this period, the general turbulence sometimes unexpectedly abates, and he may become so serene and rational, as to give

some hopes that a favourable crisis has really taken place: but the calm is most frequently deceitful, being soon followed by an universal collapse, in which death occurs, mostly without much struggling. Several cases, nearly answering to the above description, have fallen under my notice, and I have found, that if opportunely and properly encountered, they may generally be subdued; but that if overlooked or improperly treated in the commencement, they will commonly baffle the best directed measures.

There are yet other forms of congestive typhus, which, after a day or two of lassitude, are usually denoted by chillness, nausea, short, quick breathing with frequent sighing, unpleasant sensations at the stomach,—and also by white tongue, depravation of taste, irregularity of the bowels, dark bilious excrements, pain and giddiness of the head, an alarmed or confused state of the mind, paleness of the face, dejection and languor of the countenance, inflation of the epigastric region, and great prostration of strength. An imperfect excitement is gradually developed, which rises and falls three or four times in the course of twenty-four hours. During the slight exacerbations of the fever, the skin is hot and dry in some places, especially about the præcordia; the face flushed; the pulse rapid; the breathing quickened almost to panting; the eye glossy; the countenance agitated; and the mind solicitous. These short paroxysms of fever passing away, the skin grows damp and relaxed, the face pale, the pulse

less frequent and more undulating, the breathing slower, the eye duller, and the countenance and mind more serene. After some partial efforts of this nature, the excitement is sometimes fully emerged, and the fever may put on a simple or an inflammatory character; but it more often advances, with frequent heats and chills, as an irregular one of congestion, and, if left to itself, most frequently destroys the patient, within the first two weeks of the attack, by cerebral or hepatic derangement, or suddenly suppresses life, by an unexpected engorgement of the brain, or of some other vital organ. In such affections, there are occasionally distinct remissions, and likewise apparent translations of local oppression from one part to another. The remissions are commonly fallacious, and the translations are always to be dreaded, for, independently of the mischief which they may produce in the viscera affected, they denote a loss of equilibrium, and a general disorder in the circulating system, which are not easily corrected. The remarks which have been made, as to the prognosis in the severer sorts of the congestive fever, are applicable to the forms now described; except that in the latter, delirium is sometimes a favourable symptom when it is of the light imaginative kind, and when it occurs with evidences of returning regularity in the circulation and excitement.

The foregoing are some of the principal modifications of the congestive typhus, which have come within the limits of my observation; and it would

perhaps be superfluous to attempt a more detailed account of them, as all the forms of this variety of fever may be recognized by the depressed state of the heart and circulation; the uneasiness in the head; the anxiety of the præcordia; the peculiar condition of the temperature and skin; the total want of excitement, or its partial and unequal developement; the suspended or vitiated secretions; and the local load, and general oppression.

It has been noticed, that a distended state of the venous system exists in the first stage of the simple typhus, yet so slight, as to give way to the occurrence of the stage of excitement, which comparatively equalizes the circulation. It has also been shown, that in the last stage of the same modification of fever, there are sometimes certain degrees of venous engorgement about the viscera, resulting from the universally increased action of the arteries throughout the second stage, an action which forms no part of the congestive typhus. The congestive, therefore, differs from the simple typhus, first, because the viscera are far more engorged in the primary stage; and secondly, because, through the continuance of the engorgement, that stage is followed by a general collapse, without the intermediate one of regular and universal excitement, which not only partly characterizes the simple typhus, but which produces the occasional and partial congestions of its last stage.

If then the congestive so obviously differs from the simple, it may be inquired, in what does it differ from the inflammatory typhus? Universal

augmentation of heat and excitement, attend the inflammatory, which are not the concomitants of the true congestive typhus, and which may be considered as the principal *external* distinctions between them. But, further, there is in the inflammatory, not only a general excitement of the arteries, but an increased accumulation of blood in the capillaries of the diseased part; whereas, in the congestive, the force of the arterial system is not only diminished generally, but the whole venous circulation oppressed, and particularly obstructed where the congestion exists. Agreeably to this view, we find that the blood in the inflammatory is almost invariably covered with a buffy coat; but such an appearance is never observed in the strictly congestive, which seems to denote, that the size found on the crassamentum of venous blood, proceeds from the influence of a local or general change in the blood, originally occurring in the arteries. Moreover, the morbid appearances after death are different, the large veins in the viscera being greatly engorged with black grumous blood, in cases of the congestive; whereas, in those of the inflammatory, the capillary arteries of the membranes which invest the viscera are in general found principally affected, and the redness is diffused, and of a brighter colour. Still, however, it is only candid to confess, that this part of the subject is not altogether free from obscurity; for every experienced practitioner must know, that even in acute inflammations of the viscera, the action of the heart is sometimes so much op-

pressed, that the general excitement does not at all correspond to the danger and extent of the topical disorder. Possibly something similar may now and then take place in what has been called the congestive typhus, an actual inflammation, or rather perhaps an obstruction of blood in some part of the arterial capillaries, being masked under external appearances of a deficiency of general heat and of arterial tone.

The venous system is more immediately and chiefly concerned in the phenomena of the congestive typhus, and the arterial system in those of the simple and inflammatory typhus. Though the engorgements may exist in different organs in the congestive typhus, yet the large vessels about the right side of the heart, the veins of the brain and of the liver are the parts most frequently and seriously affected, and next to them, those of the spleen * and lungs. The most violent forms of the congestive typhus sometimes resemble apoplexy in their symptoms, to which indeed they often have a near affinity in their pathology. The ba-

* It is well known that the spleen may be extensively diseased, without re-acting upon the system, except through its mere pressure on the neighbouring parts. This can perhaps hardly be said of any other internal organ of equal magnitude. Can this viscus be intended by nature as a receptacle for venous blood on those emergencies, which are liable greatly to disorder the circulation? And do its structure and situation seem fitted for such a purpose? The sanguiferous system abounds with precautions against venous congestion, and should the spleen be considered one of them? Dr. Rush, of Philadelphia, formerly threw out some hints, in order to show that the spleen was an organ to preserve the system from great excitements of the heart and arteries, but is it not also adapted to guard against sudden congestions of the veins?

lance betwen the arterial and venous systems is more or less disturbed in every instance of congestive fever; for there is more blood accumulated in the veins, and of course less contained in the arteries, than in a natural state. This loss of balance is especially observable on the skin, less blood circulating in the vessels of that part than common, while the central organs of the body are greatly engorged. It is perhaps to the preternatural fulness of the larger veins, that the lowness and oppression of the pulse ought to be attributed; at least it generally rises after depletion from the veins, which seems to restore the circulation to an equal state again. From observation and dissection, I am certain that venous congestion exists in many acute and chronic diseases, combined with a deficiency of arterial action; and that in such cases, contrary to the common opinion, a low, feeble pulse generally indicates, in the first instance, the propriety rather of depletion than of stimulation. According to the calculations of Haller, the veins in health contain three-fourths of the whole mass of blood, the remainder flowing in the arteries. The same admirable physiologist has declared, that the blood may actually coagulate, from the slowness of its motion, in the veins of a living person; and he has also pointed out the precautions which nature has used to prevent such an occurrence, by the free anastomoses of vessels, which guard against obstructions, and admit of opposite currents of blood. Probably the anatomist may find, in the peculiar structure of the

venous apparatus of the head and of the liver, the cause why these organs should more often suffer in congestive fever than the rest. If we permit ourselves impartially to consider the vast importance of the whole venous system, we shall perhaps be led to conclude, that its morbid states have by no means received sufficient attention; particularly in those modifications of febrile disease, where there is from the beginning an obvious want of tone in the heart and arteries, which has too frequently been mistaken for general debility, but which is often a state of oppression, proceeding from fulness of the venous system. The various modifications of congestive fever may be divided into the regular and the irregular; in the former there is no arterial excitement whatever, in the latter there are very partial arterial excitements, united with a general depression of the system. This discrepancy of character arises from the different degrees of the venous congestion. In the regular congestive fever, the topical accumulations of blood are so great as to overpower the natural energy of the heart; whereas, in the irregular congestive fever, they are not to such an extent, and consequently admit of some re-action, which would appear like an effort of nature to restore the natural balance of the circulation. In the first stage of the simple and inflammatory typhus, there is generally more or less rigor, which ushers in the stage of excitement; but I have hardly ever met with an instance of the true congestive fever, in which the first stage was accom-

panied with universal shivering. This might lead one to suppose, that the cold shivering fit was intimately connected with the production of the stage of excitement: more extensive observation, however, than I have yet been able to make, would be requisite to confirm this as a general fact.

In the simply excitive, and in the inflammatory forms of fever the action of the heart and arteries is increased, but in the congestive forms it is diminished; and this difference in the action of the heart, together with the high temperature of the two former, and the low temperature of the latter, constitutes the most distinct mark between diseases of excitement and congestion. The first shock, in the congestive forms of fever, seems to be communicated to the nervous system, and the heat of the surface being reduced, the blood retires into the deeper seated veins, and from thence is returned in preternatural abundance to the right side of the heart; but as the power of the heart has been previously oppressed from the primary shock to the nervous system, it cannot completely rid itself of this superfluity of blood, and hence its action continues to be disturbed, and hence the return of venous blood from the brain, liver, and other organs must necessarily be so retarded as almost to stagnate in some places, when the shock has been severe. In examining the bodies of some patients who had died in the most concentrated attacks of congestive fever, I have found the right side of the heart loaded with dark blood; and in reflecting upon the phenomena of

all, am now inclined to believe, that their pathology is intimately concerned with the functions of the right ventricle. For when the action of the right ventricle is diminished, and when it is overloaded by too great an accumulation of venous blood, it must by consequence occasion a remora of venous blood in distant organs; and a sufficient portion of red blood not being thereby returned to the left ventricle, its action also must be defective, and its blood perhaps not sufficiently oxygenized for the complete purposes of vitality. But if it be highly probable, that the right ventricle is closely concerned in the pathology of the congestive forms of fever, it is clear that the left ventricle is as much so in the simply excitive and in the inflammatory forms: for in both of these the force or the frequency of the left ventricle is greatly increased, and therefore greater quantities of blood than in health must be driven through the whole arterial system; so that if there be any previous obstruction or disturbance in any part of the capillary arteries, this obstruction or distubance will now be augmented and become positive disease. It is, in fact, the increased action of the left ventricle, together with previously local obstructions or disturbances, which give rise to most of the topical inflammations which occur in all fevers; and the reason why no inflammation attends the simple forms of fever is, because the increased action of the left ventricle occurs in constitutions, the organs of which had been previously sound. If I had to fix upon any part of the body

as more immediately involved in the production and continuance of fever, it should be the heart; and yet how little attention writers have paid to this organ pathologically, though almost all the remedies which we employ exert a favourable influence through their direct or indirect operation on the heart.

One striking difference between the congestive, and the simple and inflammatory forms of fever is, that the animal heat is diminished in the former, and increased in the two latter; and as the heart's action is diminished in the one, and increased in the other, the difference in the degrees of temperature would appear to be connected with the difference in the action of the heart. But is there also a deficiency of electric matter in the congestive and an excess of it in the simple and inflammatory form, upon which the change in the heart's action and in the animal heat may partly depend? And, if future observation should answer this query in the affirmative, might not the electric or galvanic matter be advantageously communicated to, or abstracted from, the body according to the character of the case? In some diseases of general torpor attended with venous congestion and a deficiency of animal heat, I have known patients bear an accumulated force of the galvanic fluid with pleasure and advantage; whereas in diseases of excitement attended with an elevation of temperature, the slighest charge was painful and prejudicial, so that the galvanic fluid became a test whether the system was in a preternaturally torpid or

or excited state. These facts, therefore, may render the above questions less unimportant than might appear at first sight; and would not the peculiar, tingling heat on the skin, and the somewhat sulphurous taste in the mouth often seem to indicate, in the simple and inflammatory typhus, that the electric or galvanic fluid was passing out of the system? It was once imagined, that amber alone contained the electric matter, and hence this science has obtained its name, from the Greek term for that substance: but since this fluid has been found to exist in almost every thing, it is highly probable that it performs an important office in the animate as well as in the inanimate world; and as our knowledge of physiology and pathology extends perhaps some great discovery will be made, through the science of galvanism or electricity, in those yet obscure laws which exist between the nervous and vascular systems. It is a remarkable fact, that the animal heat cannot be long raised above nor sunk below the common standard without destroying that harmony of the system which constitutes health; and this heat varies in some degree even in health, and it differs in different diseases, and in different stages of the same variety of disease, but after death the body becomes as cold as the objects with which it is surrounded. That within certain ranges of temperature, there is a greater degree of heat in living animals than in surrounding objects devoid of life, is evident to all; and may not this be accounted for by the vital functions taking up,

through the medium of diet and air, as much as may be necessary for the support of the economy? There is a great difference between the effects which result from the vital operations, and the best constructed piece of mechanism; yet perhaps the subject of animal heat may be somewhat illustrated by the facts observable in the working of an electrical machine. The whole appendages and body of this machine only contain that degree of electricity according to the respective capacities of each; but when the machine is put in motion the fluid is much augmented, and part of it may be thrown off as it is formed, and if it be prevented from passing into other bodies, it may be still more increased. Is not this somewhat analogous to the animal body in a state of health, when by its vital movements it takes up and throws off those quantities of heat necessary for the maintenance and exercise of its functions? Nay is not this somewhat analogous to the animal body in fever, when the heat, by diminished secretions, is prevented from escaping, and consequently accumulates? We frequently speak of heat being formed in the system; but if in this case we mean any more than when we speak of the formation of the different fluids of secretion we surely deceive ourselves. What is it, then, that we do understand by the formation of such fluids? We understand nothing more than that they are produced from the blood by some unknown operation, and this operation is constantly supplied by diet and air, as the electrical machine is supplied from sur-

rounding objects. When we speak, therefore, of the formation of animal heat we can only mean, that it is produced by the modifications which the caloric undergoes when received into the system, and when co-operating with those materials of air and food with which it may have affinities in passing through the body. It is allowed on all hands, that we do receive caloric from the whole of our aliments, and from the air which we inspire, not to mention other probable sources. Now caloric taken up this way, diffused through the whole system, and thrown off by the exhalants, maintains such a constant succession as keeps the quantity of heat necessary for the purposes of life; and when in disease there is too high or too low a degree of animal heat, it will be found an object of the first importance to restore it as nearly as possible to the natural and uniform state, particularly in the simple, inflammatory, and congestive typhus.

Since the first edition of this work appeared, typhus has prevailed in many parts of the united kingdom, and many valuable facts have been published on the subject, strongly confirmatory of the doctrines which I had previously laid down; and indeed one able author, who has seen much of the disease, has done me the honour to adopt the whole of my arrangement, and another has taken the two first divisions as the basis of his pathological principles. Still however it seems to me, that there is too great a tendency to consider, like Erasistratus of old, the febrile affection as purely

one of inflammation under all its varieties; and some, whose talents and experience claim the highest respect, would limit that inflammation to a single organ. But though I admit, that the brain is exceedingly liable to be affected in typhus, yet repeated observations and dissections have as forcibly convinced me, that other parts are apt to be implicated in the inflammatory state; and I have seen thoracic but particularly abdominal inflammation in typhus proceed to a fatal termination, without any inflammatory affection of the brain or even of the spinal cord. Dr. Beddoes, whose anatomical researches have been so extensive in fever, states as the result of those researches, that the abdominal viscera are more frequently affected than the rest; and this I believe is peculiarly the case in those fevers which proceed from marsh effluvium, and certainly the same parts often suffer in contagious fevers. But in fixing upon no particular tissue as the seat of fever, in not limiting its character merely to inflammation, but in tracing its effects through all the body under a simple, an inflammatory, and a congestive variety, an approach it is hoped has been made towards a more correct generalization of the leading phenomena of typhus and other febrile diseases, as shall afterwards be more fully elucidated. As typhus, then, has three remarkable modifications, it may not be superfluous, before concluding its pathology, to inquire whether any of these modifications has a natural tendency to terminate on particular days. The doctrine of critical days, notwithstanding it

is said to be founded entirely on observation, was probably in some degree connected, as Celsus has hinted, with the Pythagorean philosophy which, attaching so much consequence to numbers, had many followers in the ancient world; and though Celsus was one of those cautious, temporizing men who seldom venture to give a decided opinion on disputed points, yet in regard to the doctrine of critical days, he has deviated from his usually middle course, and opposed it with considerable decision and ingenuity, in despite of his veneration for Hippocrates. Several of the greatest men, as if to bring themselves to the ordinary level of humanity, have shown much weakness on particular topics; and the emanations of their minds have been often tinged by the surrounding superstitions of their respective ages. By these hints it is not meant to insinuate, that Hippocrates could have been wholly mistaken as to critical days; for on the shores of the Mediterranean and similar regions, the common febrile affections are more periodical than in our country, a circumstance fitted to give a strong colouring to his doctrine. It may be noticed in the works of Hippocrates, that the crises in his cases were almost always attended by some evacuation, as hemorrhage, diarrhœa, and particularly sweat. There can be no doubt but each of these evacuations, from whatsoever cause proceeding, are often accompanied with some remarkable change; but that they generally occur on certain days, in preference to others, has always appeared to me an

opinion not strictly applicable even to typhous fever. Agreeably to my observation, so far from crises of this kind occurring on particular days in ordinary fevers collectively taken, they do not generally occur on particular days in the same fevers; but, not to mention that they are often wholly absent, such crises sometimes take place at one period and sometimes at another, without any stated regularity. But if by critical days were to be understood, that typhus has a sort of determinate duration, then I would subscribe to the doctrine, with certain limitations; for the simple typhus, when it preserves its unmixed character, for the most part naturally goes on for a certain number of days, and then declines, but the inflammatory and congestive have no such regular and determinate duration. Nor can we correctly fix the duration of the simple typhus, like that of the small pox and measles, to almost a precise period of time; since it has a much greater range, sometimes terminating within ten, generally within fourteen or twenty-one days, and occasionally extending to the fourth, fifth, or even sixth week. Yet I am fully persuaded, that the simple typhus may often be cut short in the very commencement, though when it has existed unchecked for a few days, I am equally confident, that its course can only be moderated; and it is of great practical importance to bear both these truths in recollection, that we may not be too inert in the beginning, nor too active in the progress of this fever. With respect to the inflammatory typhus, when the at-

tendant inflammation is acute and has occurred early, both the typhus and its attendant may be arrested at the same time: but when the acute inflammation exists in a typhous case of some days' duration, the fever will hold a determinate course, though the inflammation be subdued; and what is here asserted of the acute inflammation also equally obtains in regard to the sub-acute, when complicated with typhus. As to the congestive typhus, every sign of disease will sometimes be wholly removed with the symptoms of venous engorgement; but at other times, the fever will run a determinate course, even when the venous congestion has been removed. The doctrine of critical days has been so far important in every age, that it seems to have had a considerable influence over practice. Hippocrates himself was so much guided by it on many occasions as merely to have been a spectator of fevers, and numerous disciples have followed his example; whereas those who wholly disregarded the doctrine often ran completely into the opposite extreme, or at least neglected that medium of treatment which diseases of a certain duration will be found to require in their course.

Many other febrile diseases might be examined, to show, that, however various their causes, their grand effects on the vital organs, are still simple excitement, inflammation, and congestion; and I am greatly mistaken if this doctrine does not afford a key, which will unlock the principal difficulties on the subject of fevers particular and

general. The causes of fevers are very various, and so is their *external pathology ;* but still I must contend, that their *internal pathology* is uniform. If in our consideration of the methods of treatment we could, for the time, consider the causes and the mere *external pathology* as only of a secondary interest, and look more particularly at the great effects on the vital organs, or in other words at the *internal pathology*, our success would be much greater ; and until we do disembarrass our minds from that confusion which arises from the contemplation of so many causes, and of so many external symptoms, we shall never be able to arrive at those comprehensive and plain principles of practice, which may be successfully applied to the whole class of acute fevers. But in the course of these practical illustrations, this part of the subject will be adverted to again, meantime the treatment of typhus shall be brought under discussion ; and conformably to the distinctions already made, the cure of its simple, inflammatory, and congestive varieties, shall be explained in succession, as the treatment of each necessarily differs in some important particulars.

TREATMENT OF THE SIMPLE TYPHUS.

It would be fortunate if professional advice were sought for on the first attack of fevers, because for the most part they might then be either completely arrested, or reduced so much in their force, as to be finally overcome ; but unhappily the patient often flatters himself, that the primary

feelings of indisposition will gradually abate of themselves, and under this impression allows the disease to proceed, until a dangerous combination of symptoms renders the success of the best measures uncertain. The symptoms of the simplest typhus vary according to the time that it has continued; and this fact shows the necessity of carefully noting the several stages which have been described, for the remedies proper at one period will be found extremely pernicious at another. Yet self-evident as these truths are, they have not been sufficiently regarded by practical authorities, whose contrarieties might probably be reconciled, if we knew the circumstances under which their various remedies were employed.

As soon as any patient falls sick of typhus, and the remark may be extended to almost every fever, absolute rest should be immediately enjoined; since, how mild soever the symptoms may be at the commencement, it is impossible to foresee to what they may finally lead, if then neglected; and the hazard is always greatly increased by attempts to cast them off by business or exercise. It is in the first stage of the simple typhus, that a period may always be observed, in which, by the retrocession of blood from the surface, and by certain degrees of internal venous congestion, the general balance of the circulation is disturbed, and in which much good may be done, by very simple means. Above all things, the practitioner must not be deterred by the appearances of debility from the use of some evacuants, for they are not

only safe, but highly salutary at this time, when the system is merely oppressed by a kind of preternatural burden, and not really in a state of exhaustion.

At the beginning of this stage, the stomach frequently rejects the greater part of whatever may be taken; and, on this account, there are very few medicines, which can be advantageously prescribed. Antimonial emetics, however, have been very generally recommended, and, according to my observation, are serviceable when the fever is of the least complicated form, commonly producing an improvement in the condition of the skin, respiration, and pulse, in particular; and perhaps it is on the power which they possess of determining the blood to the surface, and of changing the morbid states of the circulation, that their efficacy is chiefly to be explained. In the beginning of almost all febrile complaints of a simple character, emetics will generally be found very beneficial; though much neglected now-a-days by many practitioners, probably on account of the universal introduction of purgatives. When the stomach has been sufficiently evacuated in the simple typhus, no time should be lost in freely moving the bowels; and it is better first to empty the lower intestines of their contents, by a large cathartic injection, which frequently lessens or allays the irritability of the stomach, and thus gives the aperients afterwards exhibited the fairest chance of being retained.

The system in general is more torpid than na-

tural in the stage of oppression ;, and of this torpor the bowels largely participate, so that purgatives ought to be given in such doses, as to insure their full operation. Nor need any risk be apprehended from three, four, or even more copious motions during the day; for, instead of weakening the patient, they will renovate his powers, lighten the system of the load which weighs it down, and contribute to restore the circulation to its healthy equilibrium. Sometimes I have known at this early period, an emetic and a brisk purgative cut short the fever at once ; and where this desirable effect has not been produced, they have hardly ever failed to shorten its duration, and to lessen its danger.

The want of preternatural heat, and of arterial activity on the surface, in this stage, would *à priori* seem to contra-indicate the use of the affusion of cold water. Without doubt it is highly improper, and might even put the life of the patient in jeopardy, by the sudden diminution of temperature, and the great pressure on the vital parts, which it would occasion by the recoil of the blood towards the interior. Yet the warm bath is a safe and efficacious remedy, and, with the means before mentioned, has considerable effect in equalizing the circulation. Tepid barley water, or thin gruel, which should now form the diet as well as beverage, may be taken with advantage, as they often have a tendency to lessen the irritability of the stomach, and sometimes to induce a gentle and general perspiration, without finally causing

any injurious excitement, local or universal. There may be cases in very old or debilitated habits, where, in conjunction with mild emetics, purgatives, the warm bath, and small portions of weak wine may be requisite before the second stage takes place ;—but in general, diffusible stimulants are quite inadmissible at this period, because they forcibly tend to make the consequent excitement of the second stage much more violent than it otherwise would have been, and might in that manner convert a simple, into an inflammatory typhus.

The apartment of the patient should, if possible, be large, and well ventilated, the heat of which ought not to be below fifty-six or sixty degrees of Fahrenheit's scale ; for it must be recollected, that as the excitement has not yet taken place, the surface of the body cannot be long acted upon by a low temperature without prejudice. On several occasions, I have been able to trace the origin of local inflammations, particularly of the chest, to an imprudent exposure to cold, in the first stage of typhus.

The second stage, or that of excitement, is far more frequently witnessed than the first, at least by physicians, who are seldom consulted until the fever has fully developed itself, and even reached its acme ; when the dry, burning heat of the skin is amongst the most conspicuous symptoms, and when a treatment is required, in many respects different from that which has been recommended in the stage of oppression. But as the morbidly

increased temperature, now involves so many important considerations, the rules relative to its management shall be explained, before proceeding to the other parts of the practice. Among the names of those who have contributed to illustrate the effects of cold and warm water, as a remedy for fever, that of the late Dr. James Currie stands deservedly pre-eminent, and will long be remembered with respect, by the philosopher, the philanthropist, and the physician. Agreeably to the experience of this estimable writer, the best time for reducing the preternatural heat in typhus, by the aspersion or affusion of cold water, is when the exacerbation is at its height, or immediately after it has begun to decline; and he therefore directs either the one or the other to be employed from six to nine in the evening, the period in which the febrile action is most intense. But he also expressly declares, that the cold water may be used at any time of the day, when there is no sense of chilliness present, when the heat of the skin is steadily above what is natural, and when there is no general or profuse perspiration. These principles are equally simple and intelligible, and on repeated trials I have found them excellent guides, during the whole term of excitement; although, as shall be afterwards shown, they may be deceptive, and even dangerous, if followed in the stage of collapse. And so far as I have remarked, a *slight* sense of chilliness ought not to preclude the application of cold water, provided the arterial excitement be universally developed, and the tem-

perature every where steadily at a morbidly high point; care being taken, in such cases, that the water be not lower than 60°. of Fahrenheit's thermometer, and that too large a quantity be not affused at one time.

During the first, second, and third day of the stage of excitement, more especially during the first, I have sometimes seen the simple typhus entirely extinguished by the affusions of cold water, and failing to effect so much, they have generally been highly refreshing to patients, and, with other measures afterwards to be noticed, have enabled me so to lessen the fever as to ensure a favourable issue. But from the fourth day of this stage, I have not often seen them useful; and from that time onward, until the period of collapse, it has been customary with me to employ the tepid affusions or bath, at the temperature of 94° or 96° of Fahrenheit's scale. When the former are used, in general I order, four or five times in twenty-four hours, about two gallons of sea-water, or spring-water mixed with some common salt, to be poured over the patient while he is supported upon a stool placed in a low, wide tub, his feet being covered with warm water: this operation is repeated at intervals of about one or two minutes, twice or thrice each time, until the skin become comfortably cool, but not chilly, or contracted. The surface is then carefully dried, the patient put to bed, thinly covered, between clean sheets, and allowed to take moderate portions of some milk-warm, bland fluid, by way of promoting a gentle perspiration. Fre-

quently when the tepid affusions have not succeeded in cooling the cuticle, I have added a small portion of ardent spirit to the water, with excellent effect, for it carries off the superfluous heat by a more rapid evaporation from the surface. In ordinary practice, a little *common* vinegar is the usual substitute on such occasions; but it is rather objectionable, because it very often contains a quantity of mucilaginous matter, which being spread over the skin, by the affusion, prevents the cooling process from taking place so readily, as when water merely, or when water and spirits are used, and which also, interrupting the perspiration afterwards, causes a more rapid accumulation of the febrile heat. This observation may seem too minute, but of its accuracy I am fully convinced.

When the warm bath is employed, the patient should remain in it at least ten minutes, or a quarter of an hour, otherwise it will be rarely followed by any permanent good. Perhaps it is difficult to speak with accuracy of the comparative utility of the tepid affusions and bath; but the latter has appeared to me more decidedly serviceable, its power in reducing heat, frequency of pulse, and febrile irritation, having been generally greater, and of longer continuance.* But, as a counter-balance to these advantages, the affusions

* It may at first sight appear paradoxical to say, that the warm bath is useful by removing heat. But this is certainly the fact, for when properly used, it will always tend to diminish morbid temperature; at the same time, its good effects are partly to be ascribed to the power which it evidently has in equalizing the circulation.

can be more frequently used, since they do not induce so much fatigue. Where insurmountable objections exist, in the patient or his friends, against the use of the tepid bath or affusions, partial ablutions of cold or warm water may be substituted, and with the aid of the free admission of fresh air, they are often of much benefit.

Among some of my medical friends, a strong prejudice prevails against the application of cold water in typhus, which has arisen from their having known several cases prove fatal, shortly after its use; three of this nature have come within my observation, but in one of them, the cold affusion was tried in the stage of oppression, and in the others at a very advanced period of the fever. Indeed I have reason to believe, that in all the fatal examples, above alluded to, it was unfortunately employed under similar circumstances. Occurrences such as these are the more to be deplored, not only because they might have been prevented by an acquaintance with the principles of Dr. Currie, but because they likewise contribute to raise false prejudices and fears in the minds of the faculty, and of the public in particular.

The morbid temperature in typhus, is sometimes partly dependent on extraneous causes, as the heat and closeness of the chamber, or an extraordinary quantity of bed-coverings; and even under such a state, I have occasionally known patients with a dry and burning skin actually to complain of chilliness, their too officious attendants carefully excluding every breath of air, and drawing the cur-

tains closely round the bed, to prevent them, as they supposed, from catching cold. When causes similar to the above are present, the practitioner cannot immediately ascertain whether the morbid temperature of the skin be strictly febrile or not: and therefore he ought to remove them, and wait at least half an hour, that he may entirely satisfy himself as to this point; for if the cold water were rashly dashed at once over a patient, confined in such a warm, stifling atmosphere, the result might be injurious, if not dangerous. Nor should any one, when about to advise this powerful remedy, rely implicitly upon his sense of touch, or upon the feelings of the sick, in regard to the degree of preternatural heat, but ascertain it precisely by an accurate thermometer.

The cold and warm affusions may be serviceable not only by exciting a new train of sensations in the nervous system, but by removing morbid heat and irritation, and by reducing the force and frequency of the pulse, as well as by restoring the natural functions of the skin. It is chiefly with a view of cooling the surface of the body, that both these expedients have been used and recommended; as if modern practitioners had imbibed the speculation of Plato, who thought that a continual fever proceeded from an excess of fire. But I have never seen them really advantageous, except when they diminished the action of the heart and arteries, and produced something like a healthy perspiration; and I suspect that, whatever may be their immediate influence on the temperature and nervous system, their

permanently good effects are to be attributed to the changes which they induce in the circulation. With the exception perhaps of venesection, there is not a more powerfully antiphlogistic mean, in certain fevers, than the affusion of cold water, which has also this peculiar advantage, that it is highly invigorating; while phlebotomy and other depletory measures have a tendency to debilitate, when pushed beyond a certain point. It is, however, in the simplest forms of typhus, that this remedy is so generally efficacious; and the warmest admirers of Dr. Currie surely cannot deny, that, in the ardour of his inquiries, he has overlooked some of the most interesting varieties of idiopathic fever, in which cold water is either wholly inapplicable, or of limited utility, as will be exemplified in another place.

From all that has been remarked, it will be manifest, that cold and tepid water may be profitably applied during almost the whole period of excitement. It is in this stage, too, that purgative medicines are so exceedingly useful, and they ought to be exhibited every day, either a little before or after the application of the warm or cold affusions; a judicious combination of both these means being much more efficacious, than either of them singly employed.

Boerhaave has said, that the strength is not easily reduced by evacuations, in the commencement of febrile disorders; and if this observation be more particularly applied to those procured by

purgatives, it must be allowed to be most correct; the debility caused by their repeated operation being far less than might have been previously supposed, and trifling when compared to the general good which they produce. The world is greatly indebted to Dr. James Hamilton, senior, for having so firmly established the usefulness of aperient medicines, which, notwithstanding the testimonies of some ancient and modern physicians in their favour, were either thought pernicious, or not generally admitted in contagious fevers, before the publication of his work,* than which none perhaps of greater value has appeared, in the medical republic, since the days of Hippocrates. For by it the author has not only fixed the treatment of many important diseases on incontrovertible principles, but overthrown some pernicious theories, opened new views for future inquirers, and, like Bacon, pointed out the way by which they may be most successfully explored. But as no human performance was ever yet perfect, so the defect of Dr. Hamilton's work, in regard to febrile diseases, is that he has not marked with sufficient minuteness the stages and conditions in which purgative medicines ought, and also those in which they ought not be employed; for however appropriate *purgatives* may generally be to the stage of excitement, yet when that of collapse approaches, they may often be followed by a

* Observations on the Utility and Administration of Purgative Medicines in Several Diseases.

fatal exhaustion, and those milder medicines called *laxatives* are then mostly preferable, as shall afterwards be made evident.

Seldom less than four or five alvine evacuations should be daily procured, during the stage of excitement in tolerably robust subjects; and as the bowels, for the most part, are then preternaturally torpid, pretty full doses of medicine should be exhibited, that no time may be lost in the repetition of small and ineffectual ones. In the commencement and whole course of typhus, it sometimes happens, that the bowels are in an apparently lax state: but if the evacuations be carefully inspected, they will almost always be found very fetid and mud-coloured, or slimy, chopped, and scybalous; and therefore aperients are indispensably requisite, to remove the abdominal irritation, of the existence of which such stools afford the strongest presumption.

Purgatives seem beneficial, by unloading the intestines of feces and excrementitious matters, which, when retained, excite and keep up much general irritation. But is it not exceedingly probable, that they have another and far more salutary effect, in restoring healthy secretion, and in removing irregular distributions of blood from the head, liver, and other vital parts? The full operation of aperients sometimes reduces the morbid heat of the skin, and the morbid force of the pulse, almost as effectually as the affusion of cold water or venesection;—consequences which surely indicate, that their action extends further than the

mere removal of fecal matter from the intestinal canal. In truth, a simple *laxative* will be found to effect little in the first stages of fever, when a brisk *purgative* produces the most unequivocal advantage; a demonstrative proof, in my opinion, that the benefit resulting is not altogether from the mechanical dislodgement of the feces, as the excellent author of the above work on purgative medicines seems inclined to suppose. Yet I believe that purgative medicines are also beneficial by preventing, through their operation, the absorption of the morbid secretions and excrementitious matter of the intestines: for when these have been allowed to be retained in typhus, I have generally observed a considerable increase of irritation, with an offensive odour from the lungs and from the skin; and on the contrary, when the morbid secretions and excrementious matter have been regularly evacuated, there has mostly been a diminution of irritation, with an absence of this peculiar odour.

My observations on the qualities of febrile urine have not led to any practical results of consequence. Having, however, often remarked an alarming increase of the pyrexial symptoms from a retention of urine, I cannot refrain from suggesting, that practitioners should make a point of ascertaining whether the patient passes it every day in sufficient quantity; and they should not allow themselves to be deceived, when it constantly dribbles away, for while that is the case, the catheter in general is absolutely necessary,—

not to mention the great attention which is then requisite to prevent excoriations of the perinæum or adjacent parts. But if the bowels be kept open from the beginning, a complete or partial retention of urine will hardly ever be witnessed in typhus, or indeed in any other fever. It may be commonly remarked, in febrile complaints, that where a small quantity of urine is secreted, the sediment is proportionably copious; and, on the contrary, where a large quantity is secreted, the sediment is proportionably scanty. A long retention of urine in typhus is commonly an indication of some disorder in the brain or spinal cord.

Perhaps the period is fast approaching, when diffusible stimuli will be universally prohibited in the earlier stages of almost all ardent fevers. It may be laid down as a principle, that they are very detrimental in typhus during the stage of excitement; and upon this point I can speak with much confidence, having not only frequently seen the baneful effects of their exhibition, but the salutary change which has followed their abstraction. It would be quite as rational to give a half intoxicated man a tolerably free allowance of ardent spirit, with a view to make him sober again, as to attempt to restore, at this time, a typhous patient, by the administration of wine; for he may be said to be in some degree intoxicated by the stimulus of the fever, and he will therefore be more affected by every glass of cordial that is administered. It has been contended, that wine does not stimulate so much in fever as in health; but so far from this being the case it has always appeared to me to sti-

mulate much more, while the stage of excitement continues. Strange as it may appear, it is still the custom of many practitioners to pour in large quantities of wine indiscriminately, throughout all the stages of the genuine typhus. If, by any chance, the energies of the constitution should finally prevail against both the disease and this injudicious treatment, the recovery is falsely attributed to the wine, and thus a most dangerous error is at once propagated and respected—an error by which an immense number of febrile patients has been destroyed. When strong stimulants are exhibited at the time, and in the manner above noticed, they have a powerful tendency to produce inflammation or congestion in the visceral organs, and thus to render the chance of recovery at the best very doubtful. So far from their being admissible in this stage, the lightest and coolest regimen is imperiously demanded, and even every animal substance, with the exception of a little milk, ought to be strictly prohibited.

There is generally some remission of the fever in the simple typhus towards the morning, and the patient will almost always be much less oppressed at that than at any other period of the day; but as the excitement gains ground, the debility increases, and may be observed to be the greatest when the exacerbation is at its highest point in the evening. And surely this fact, which I have repeatedly witnessed, goes far to prove, that the debility in this stage is merely the consequence of the excitement. If, as some have contended, the debility were real at this time, how comes it to

pass, that it is invariably increased by diffusible stimuli and animal food, and diminished by purgatives, spare diet, and whatever allays or lessens the excitement? When the doctrines of debility were so prevalent, it was the established practice to give strong wines and broths during the whole period of excitement, and the fatality was extremely great: but now, wherever the antiphlogistic regimen has been adopted, instead of those pernicious means, the disease has been generally found remediable in the beginning.

With respect to diet, I have always endeavoured to make it as simple as possible, being firmly persuaded, that there is no disease in which the stomach should be less pampered than in typhus, and this indeed is pointed out by the loathing of food, with which it is attended. Moreover, it will be found impossible to support the strength of the patient by a strong and varied diet, so long as the excitement continues; nay, it will have a directly contrary effect, for by augmenting the febrile irritation, and disordering the digestive and biliary organs still more, it may eventually induce local inflammations, or congestions of a fatal description. Milk largely diluted with water, a little thin arrow root, milk-whey, barley water, or thin gruel, will answer every purpose of sustaining the powers of the system, without exciting the heart and arteries. There is a strong popular prejudice against the use of milk in fevers; but popular prejudice is sometimes merely another name for popular error, and it is most assuredly so

in the point under consideration. Hippocrates simply declares, that milk is bad * in febrile distempers; but Sydenham and Heberden speak of it very favourably, and my own experience has confirmed their recommendation. But it is not the quality only of food that ought to be regarded, for as it is customary in fevers to give very small portions frequently, much too large a quantity is often administered in this way; and the consequence generally is an increase of general irritation, and sometimes even an attack of inflammation, especially of the stomach or intestines. The quantity of food, therefore, in the stage of excitement ought to be exceedingly moderate, as well as its quality mild; and by an attention to these two circumstances the waste from the necessary evacuations may be sufficiently supplied, without the risk of either augmenting the general excitement, or of occasioning any topical irritation.

At all times of the second stage, the admission of fresh cool air, frequent changes of linen, thin bed-coverings, cold sub-acid drinks, quietness, and the abstraction of every extraordinary stimulus, are particularly calculated to allay the universal excitement and irritation, and are in general highly acceptable to the sick; but with respect to ventilation in this stage, currents of air ought always

* Popular errors, on medical subjects, are mostly the errors of the physicians of former ages. It is, perhaps, not improbable, that the one here mentioned, in respect to milk, originated with Hippocrates, and, having been embraced by others, has thus been transmitted down to our times.

to be avoided, as they may produce some pulmonic or abdominal inflammation, or give rise to an attack of rheumatism or erysipelas.

In the milder cases of the simple typhus, little will be needed in the stage of collapse, the powers of nature in general, assisted by light nutriment, being fully adequate to the recovery. But in the more urgent examples, the treatment in several particulars must be materially different from that laid down in the two former stages. Evacuations, more especially, ought not now to be induced, but with the greatest circumspection, for several cases have come within my knowledge, in which patients thus far advanced in typhus, have sunk very rapidly, from the repeated operation of a strong cathartic. Generally speaking, in this stage one or two moderate dejections will be quite sufficient in twenty-four hours. There are, however, some exceptions to this rule, which it may not be improper to notice here.

When the exhibition of purgative medicines has been neglected in the beginning of typhus, an extraordinary accumulation of feces often exists in the last stage, and occasions an alarming oppression of the brain, accompanied with great prostration of the natural powers, flushed face, suffused eye, delirium, or some degree of stupor, high breathing, foul tongue, and quick, uneven pulse. In such cases, the abstraction of the smallest portion of blood would be eminently hazardous; but I have frequently seen the most agreeable change induced by full doses of brisk purgatives, such as

calomel with jalap, aided by large enemata, the strength of the patient having been supported during their operation by moderate allowances of good wine. In the advanced stages of typhus, when cerebral oppression is thus secondary of loaded bowels, much sometimes may be effected by the combined employment of purgatives and cordials, care being taken that the former act with tolerable freedom, and that the latter only be given to obviate the debility, without too powerfully exciting the general circulation.

In the last stage of typhus, when the bowels have not been regularly moved in the preceding stages, it is not uncommon for patients to pass frequent, small, loose, fetid stools, which are sometimes mixed with slime and blood. Yet such an occurrence does not prohibit aperients, but rather pressingly indicates the necessity of their exhibition; since the distressing looseness is the consequence of offensive sordes retained in the bowels, and ceases when they are effectually removed by active purgatives; though it will often be requisite to give a small opiate soon after their operation, and to support the strength with cordials, as in the instance before mentioned.

If the above circumstances fully authorise the liberal employment of purgative medicines in the last stage of typhus, there are others which seem almost entirely to prohibit them. If patients be kept in very close apartments, and even if their bowels be daily attended to during the first and second stage, it may be occasionally observed,

that on the approach of the last stage, frequent, copious, black bloody stools are passed without any offensive odour. About the same time, too, peculiar petechiæ begin to show themselves upon the extremities, which at first are only few in number, and appear as if a drop of very black ink had been allowed to dry here and there upon the skin, and as if they could almost be rubbed off by the fingers; but they soon become numerous, and spread over differerent parts of the body, and at last are generally accompanied by discharges of blood from the nostrils, mouth, bladder, or bowels. Under these circumstances, I have almost always observed, that aperients increased the effusions of blood, and caused a sudden depression of the vital powers. Indeed, whatever plan may be pursued, there is no calculating upon success; but the free admission of fresh air, the liberal allowance of lemon juice, mixed in a little Madeira wine and water, with very small doses of opium and aromatics, are the means on which most reliance may be placed. After death, in two cases of the above description, with the exception of some trifling congestions, no decidedly morbid appearance was discoverable, nor were there any coagula of blood in the intestinal canal, though much had been previously evacuated. As instances of this kind are almost invariably fatal under the common modes of practice, it is evident that we are still ignorant of their real nature. Repeated reflections upon them have led me to suppose, that the cause of death is some peculiar change which takes place in the blood it-

self, rendering it unfit for the purposes of vitality. The inhalation of the exhilarating gases has never, I believe, been recurred to in such cases: is it at all probable, that some of them might be beneficially used? Yet, by this query, it is not my design to recommend any of them to actual trial, but merely to suggest the consideration of them to those who may hereafter investigate this subject. The humoral pathology no doubt abounded with absurdities, yet, I am fully satisfied, that there are several diseases, to which it might, in some degree, be justly extended; and therefore believe that its almost entire abandonment has been prejudicial, by leading us from the investigation of various morbid states of the fluids, and of the means best fitted to correct them. The foregoing hemorrhage from the bowels is peculiar, inasmuch as it takes place in the universal collapse, and is dependent on a depraved state of the fluids and a loss of tone in the overloaded capillary system of vessels; but when bloody stools occur in the stage of excitement, they are indications either of preternatural fulness of the liver, or of inflammation of the mucous membrane of the bowels, and therefore such evacuations must not be confounded with the hemorrhage, which has been so specially noticed in conjunction with the inky petechiæ.

Sydenham and some later writers seem to have thought, that petechiæ were the effect of increased arterial action, while others again have considered them as the strongest proofs of general relaxation.

It has appeared to me, that they sometimes arise from increased action, as in the stage of excitement; at other times from relaxation of the extreme vessels, as in the stage of collapse; and frequently from a dissolved state of the blood, which undoubtedly occurs in the last stage of many fevers. When petechiæ proceed from increased action, they are at first of a bright red colour; when from relaxation, they are generally of a darkish brown; and when from a dissolved state of the vital fluid, they have an inky appearance, and are almost always accompanied with effusions of very dark blood from other parts of the body, as the nose, bladder, or intestines.

Different kinds of purgatives being mostly requisite in the different stages of the simple typhus, some remarks on the effects of those in common use may perhaps serve to show what sort ought to be selected. Calomel has probably a more general influence than any other cathartic; it excites a degree of nausea in the stomach, emulges the biliary ducts, dislodges scybala most effectually, corrects morbid secretions, and with small doses of the antimonal powder,* or of the tartrite of antimony, promotes perspiration as well as purges; and this combination, therefore, is well suited to the stage of excitement. Castor oil, in one respect resembles calomel, for it completely unloads the alimentary canal of its contents; besides, it tends to allay tormina or tenesmus, and every species of irrita-

* Oxidum Antimonii cum Phosphate Calcis. Phar. Ed.

tion about the rectum.* Jalap and rhubarb seem chiefly to exert their power on the larger intestines: when conjoined with calomel, they are very certain in their operation, and when given after it, especially rhubarb, have a tendency to remove the tenesmus and the mucous discharges, which it frequently produces exhibited alone. The neutral salts, such as the sulphate of magnesia, have a peculiar effect on the inner coat of the bowels, evinced by copious liquid stools; yet they are not to be trusted to singly, because they may, though given day after day, leave a considerable quantity of scybala in the arch of the colon. Magnesia often allays irritability of the stomach, particularly when accompanied with bilious, or sour watery vomitings; it may therefore be advantageously combined in many cases with other aperients, and, when followed by lemon juice, is frequently a certain and powerful purgative. Aloes, and similar drugs have most influence on the lower part of the intestines, particularly when prescribed in the form of pill. From these hints it will be apparent, that calomel, antimony, jalap, and the like, with neutral salts occasionally, are most proper in the first and second stage, and that, with some excep-

* It is very common to give castor oil, made into an emulsion by the yolk of an egg, or a small portion of alkali; but this is a most exceptionable prescription, for I have repeatedly remarked, that it is very liable to occasion vomiting, and is generally uncertain in its operation. One of the best modes of administering castor oil is to mix it in lemon juice and water, or in warm coffee. Under this simple form, it sits most easily upon the stomach, and operates with the greatest certainty. The dark-coloured castor oil, or that called West Indian, is more efficient as a purgative than the pale-coloured, or that called East Indian.

tions already mentioned, the mildest laxatives are most proper in the last stage of the simple typhus; but as castor oil, by varying the dose of the dark or pale-coloured, may be made to answer either as a purgative or a laxative, so it will be found upon the whole one of the most useful aperients.

It is in the stage of collapse, that the principles laid down by the philosophic Dr. Currie may be deceptive, in regard to the application of cold water. For it not unfrequently happens, that a glow of heat is diffused over the surface, and if the thermometer be applied, a temperature somewhat above natural even will be manifested, which may continue for one or two hours together, though it is seldom longer stationary at one time. Yet if the patient be narrowly examined, some parts of the body will be found rather cooler than others, and symptoms of general relaxation will be pretty evident. At this period, neither the cold nor the tepid affusions can be applied to the whole surface without great risk, though partial ablutions of the hands, face, breast, and feet, with cold or warm water, are often highly refreshing, as are likewise the temporary but cautious admission of cool air, and very small draughts of any cool liquid—such being the difference between the partial and the general application of the same or similar means. If a man were excessively fatigued by a long journey on a summer's day, the sudden dashing of three or four gallons of cold water over his naked body would almost chill him to death. But let his hands, face, and feet be quickly washed

in cool water, give him a little cool wine and water to drink, and you diffuse new life throughout his languid frame. Something similar may often be remarked, where partial ablutions and small portions of cool drinks have been employed in the last stage of the simple typhus.*

Having expressed myself strongly against the exhibition of wine in the first and second stage, candour requires me to confess, that I have often seen it useful in the last, as indeed has already been hinted, in speaking of cerebral oppression from loaded bowels, and of apparent diarrhœa, attended with a state of real debility. But on the first approaches of the stage of collapse, wine should be sparingly administered, and its effects carefully noticed. If it diminish the irritation and render the skin universally moist and warm, the tongue softer as well as cleaner, the breathing slower, and the pulse less frequent and fuller than before, the propriety of proceeding in its use is strongly indicated. Whereas, if the irritation become greater, the skin hotter, the tongue drier, the breathing quicker, and the pulse sharper and

* A few solitary and remarkable cases have been published, to show that cold water, under the form of beverage or aspersion, has been freely and advantageously used in the very last stages of fever, when the debility was extremely great. But such rare cases only form an exception to a general rule, and ought not to influence our ordinary practice. A striking instance of this nature may be found in the Life of Cellini who, when exceedingly exhausted by a protracted fever, drank very copiously of cold water, which produced the most decided benefit. See Vol. i. page 339, of the Life of Benvenuto Cellini, a Florentine Artist. Translated from the original by Thomas Nugent, LL.D. F.S.A. In two volumes. London: printed for T. Davies, 1771.

more rapid, its further employment is most certainly contra-indicated; though it should not always be abandoned on the first, but sometimes have the chance of a second trial, after the expiration of a few hours. Now that the evacuant is succeeding to the stimulant treatment in the early stages of idiopathic fevers, wine has been too indiscriminately decried by some recent writers in the last stage; for however strong my partiality may be for evacuations while the excitement maintains its power, yet there are certainly some cases in which wine, cautiously given, is almost as suitable in the last stage, as evacuations are in the first. Sydenham acknowledges, that he has saved patients by the employment of cardiacs when real exhaustion supervened in fever; and every experienced man, who is not the slave of a particular practice, must have met with similar instances.

Madeira is perhaps preferable to every other wine, being very grateful, and at the same time remaining lightly upon the stomach, but it should not be given in an undiluted state. It has long been usual with me to mix it with four or five parts of milk; and under this form it makes both an excellent drink and diet, in the advanced stages of typhus. It is impossible to fix the precise quantity of wine that ought to be given, as it must be varied according to the nature of the existing symptoms, the age, constitution, and previous habits of the patient. As some kind of rule, however, from one to two-thirds of a pint, in twenty-

four hours, is amply sufficient for an adult, though it should not only be given diluted, but in small portions at a time. Although in the last stage of the simple typhus a moderate allowance of diluted wine be often necessary, the free employment of strong stimulants, at such a time, may be compared to violently lashing and spurring an exhausted animal, in order to keep it in motion; for in both cases, the vital principle would immediately be raised by the applied powers, but, failing in proportion to each preceding excitement, it would be rapidly and irretrievably sunk, by the frequent repetition of such treatment. When the stronger wines excite too much, the weaker, such as claret, may be tried; and if these should not answer, small, repeated draughts of mild brisk ale or porter may often be given, with excellent effect. Indeed, in many cases, fresh malt liquor quenches the thirst, supports the strength, and allays the irritation decidedly better than wine; and I know no diffusible stimulus which, upon the whole, is preferable to it in the last stage of typhus, as it is well suited to give that degree of vigour to the system, requisite to remove those partial congestions, which often exist at that period in combination with general debility. Dr. Stoker of Dublin, in a sensible but an incomplete work,* has spoken highly of yest in the advanced stages of fever; and I have often had reason to be satisfied with its power of gently opening the bowels, cleaning the

* A Treatise on Fever, &c. By William Stoker, M.D. London: printed for Longman & Co. 1815.

tongue, and diminishing thirst, especially when administered alternately with ale. When great irritation exists in combination with great exhaustion, it has repeatedly appeared to me, that those waters which contain a large portion of carbonic acid gas have been very useful in lessening the irritation; and therefore I cannot but recommend this gas to the consideration of others, where tremors of the muscles exist, with a soft weak pulse, and a highly susceptible state of the nervous system. As soon as an appearance of convalescence is observed, diffusible stimuli of all kinds must either be lessened or entirely withdrawn, because too liberal or too long a perseverance in their use may occasion a relapse of fever, complicated with some open or masked inflammation of the viscera.

At the thirty-second page I have noticed a peculiar modification of the simple typhus, which occurs as well in feeble hysterical women, as in constitutions broken down by the long use of ardent spirits, and which is, now and then, attended with a wild and almost maniacal delirium. The chief remedies for it are mild purgatives, the warm affusions, and in the last stage small, frequent doses of opium, combined with calomel. It is surprising how rapidly the stage of collapse sometimes supervenes in habitual drunkards, who should always have an earlier and a more liberal allowance of stimulus than those who have lived in an abstemious manner, otherwise they will generally sink under the evacuations, which may be indispensably

necessary to remove the disordered condition of certain organs.

The diet should be light and nutritious in this stage, consisting of arrow root, sago, beef tea, calf feet jellies, or milk. One or two simple articles should be chosen, and strictly adhered to, as they will answer infinitely better than a complication of various things. It is a nice point at this crisis to avoid giving the patient too much or too little nutriment, but even here perhaps excess is the most dangerous extreme. Great anxiety to prevent the sick from sinking, often induces their attendants and friends to give much more food than can possibly be digested, and it either lies as an oppressive load upon the stomach, or induces an exhausting vomiting or diarrhœa. When the weakened condition of the digestive and assimilative organs are considered, it cannot but appear, even from reason, that small portions of plain, simple food, given at stated intervals, will best support the remaining strength of the system, and this is really confirmed by experience. Heberden has said, that fresh air is one of the best cordials in fever; and a similar remark may be extended to sleep, with additional force. Whenever, therefore, patients fall into a tranquil slumber, they should hardly ever be disturbed to give them food, until six or seven hours shall have elapsed:—such a repose is most desirable, and will sometimes renovate nature, when her faculties had before seemed prostrate beyond the power of recovery.

In the last stage of collapse, the temperature

of the apartment should not be permitted to be so low as to endanger an attack of chilliness; for where the general circulation is great, a rapid reduction of the animal heat may speedily be fatal, by sinking the heart's action. In some instances I have known an exposure to the cold air, in getting up to the night chair, cause a shivering fit, under which the person died in a few hours; but death will rarely happen, if some warm stimulant be immediately administered internally, and sufficient warmth applied to the external parts of the body. The depression of the animal heat, however, occasionally comes on in the collapse of typhus, without any apparent cause; an instance of which I once witnessed in a medical gentleman, who I believe would have died, if external and internal warmth had not been promptly and perseveringly employed. As the pulse becomes very small in such examples, and the extremities very cold, this condition might easily be confounded with the approach of gangrene in some of the viscera: but when external cold is known to be the cause, it is easily distinguishable, if the previous history of the case be taken into account; and where it arises spontaneously, the previous history, too, will greatly assist in the diagnosis, together with the absence of those symptoms which peculiarly characterize an approach to mortification within the abdomen.

Perhaps it may be asked, why I have not mentioned venesection as a remedy in the onset of the simple typhus? But I appeal to every prac-

titioner of experience and candour, to support me in the assertion, that it may be safely dispensed with in the majority of cases. When typhus appears from the first under its least complicated form, the early adoption of the plan laid down will in general not only ward off inflammatory symptoms, but those putrid ones, which are apt to arise out of them; and thus it is calculated to prevent the necessity of blood-letting in the second stage, and the free administration of stimulants in the last. At the same time, whenever, in defiance of the means already recommended, there is an early threatening of some visceral inflammation, the immediate employment of general or local blood-letting, promptly followed up by the application of blisters, will generally be found necessary. It may indeed be regarded as an axiom, that bleeding, if it should not do good, will hardly ever do any harm, in the *commencement* of febrile diseases; but local will almost always be preferable to general in weak habits who have been badly fed, and the contrary in those who are naturally robust, and have been well fed.

It has already been hinted, that fever and inflammation may supervene during a state of convalescence from the simple typhus. The causes of such an occurrence may generally be traced to an imprudent exhibition of stimulants, to a neglect of the bowels, or to an unseasonable exposure to cold. When patients are once deemed convalescent, we are too apt to leave them to

pursue their own inclinations; but instead of being so careless, we should warn them against what might be injurious, and likewise point out what is most proper. If any secondary fever should arise, from some of the causes enumerated above, it ought to be ascertained, whether it be an affection of simple excitement, or complicated with some visceral inflammation. If it be a simple fever of excitement, the antiphlogistic regimen, and a few brisk purgatives, will soon remove it; but if it be conjoined with any visceral inflammation. to these means, venesection and blistering must be generally united, though the quantity of blood drawn must be cautiously regulated by the strength of the patient. This secondary fever, however, is most frequently of a simple character, and when it is combined with inflammation, the pleura or the liver is the part commonly attacked; a stich in the side, and an accelerated pulse being often the first warnings of the approaching danger.

It is finally to be observed, respecting the treatment of the simple typhus, that much may be safely attempted in the first and second stages, and the practitioner is highly culpable, who neglects to avail himself of every favourable occasion which they offer. But in the last stage, particularly of severe cases, it is most dangerous to attempt a great deal; and the *nimia diligentia*, the extreme officiousness which leads to a variety of prescription must be studiously avoided, since the time for demonstrating the decided efficacy of medicine is

unfortunately past; and perfect quietness, ventilation, cleanliness, regular supplies of proper cordials and food, mild laxatives, with occasional small opiates to allay irritation, will often do more towards restoration than all the boasted specifics in the world. In short, we should, in some degree, imitate the practice of Asclepiades, who, as Celsus informs us, allowed his patients little respite in the beginning of fevers, but administered even to their luxuries in the advanced stages.

Many other causes beside that of contagion, produce a febrile state, attended with simple excitement: but from whatsoever cause the simple excitement may originate, the treatment requires to be regulated by similar principles; and it is especially needful in all such cases, to diminish the preternatural action of the heart and arteries at an early period. For although the excitement at first may be so equably diffused as to exhibit no marks of topical inflammation, yet in its progress, topical inflammation may arise if any one organ had previously happened to be weaker than another. Whenever in fact, excitement is developed, the sooner it is checked the better, lest it ultimately lead to inflammation, or exhaust the patient by its mere continuance; and if proper measures were always opportunely applied in fevers of simple excitement, they would not often be productive either of inflammation or of serious exhaustion.

TREATMENT OF THE INFLAMMATORY TYPHUS.

If blood-letting be used in all the various forms of typhus, without due regard to the period of the disease, the quantity of blood drawn, the manner of abstracting it, and to the age, habits, and constitution of patients, it must doubtless be often followed by fatal consequences. But, on the contrary, if it be employed with discretion at an early period of the inflammatory or congestive varieties of the complaint, it may be proved to be an instrument of the greatest utility, effecting what no other can so well effect—the preservation of the structure of the main parts in the living machine, when endangered by preternatural irregularities or accumulations of blood. Through the prevalence of false hypotheses, forty years ago purgative medicines were prohibited, but happily their efficacy is now universally acknowledged; and before forty years more shall have elapsed, the efficacy of blood-letting, I doubt not, will be as firmly established in certain varieties and stages of most contagious fevers.

The Greek, Latin, and Arabian physicians used phlebotomy in almost all acute fevers; and every one knows that it was the favourite practice, not only of our illustrious countryman Sydenham, but of many of his contemporaries and successors, who thought and acted for themselves, amidst the fluctuations of fashion and of theory. There truly seems an uncommon agreement between the best practical authorities of ancient and modern times,

with respect to the propriety of venesection in certain forms of idiopathic fevers,* whilst every new fact that is brought to light tends more firmly to establish its usefulness in certain cases, when discreetly employed. During the rise and progress of the fatal doctrines of debility and putridity, the lancet was condemned in many fevers, and by authors who, with a singular inconsistency, continued to commend the sagacity of Sydenham. But the speculations of Cullen and other men of genius, which have so long obscured our pathological views, are at length passing away, like clouds before the spreading light of more favoured times, and we may reasonably hope, will soon entirely disappear from the horizon of the medical world.

As reformations in physic, like reformations in politics, often extend further than their first movers intended, perhaps there is even now a danger lest, in abandoning the notions of debility and malignity, we should run into the opposite extreme, and consider some idiopathic fevers more inflammatory than they really are in this country. An error of this kind, I conceive, has been committed by some recent writers of note, who, in their respective essays, have frequently confounded ordinary fevers with the true typhus fever, and thus unconsciously given to the latter too high an inflammatory colouring. Probably the

* The reader will find a full confirmation of this assertion, in an interesting Essay on the Agreement betwixt Ancient and Modern Physicians. By John Barker, M.D. London: printed for G. Hawkins, 1748.

numerous and very excellent treatises published by the practitioners in warmer climates, where fever presents a more ardent aspect, and is attended with higher excitements, have powerfully contributed to produce the recent changes in many important points of opinion and practice. Yet with whatever disadvantages it may be attended, the lapse of a few years will enable the physicians of Great Britain to appreciate and apply venesection as correctly as other evacuants. The grand principle of early depletion, either by bleeding or purging, may be properly extended to almost all acute fevers, idiopathic and symptomatic; although it cannot always be carried so far in the former as in the latter, nor perhaps in temperate as in tropical regions; and although, like other general principles, it requires to be modified by the nature of the existing circumstances. The successful application, too, of this principle, depends much upon a judicious choice of the means, and the time and the mode of their employment, as will be shown in detailing the treatment of the inflammatory typhus.

In a former part of this work, it has been stated, that I do not consider inflammation as an inseparable and essential part of typhus; but, having so frequently seen that disease combined with inflammation, I have simply used the term inflammatory typhus to express that combination, without attaching to it any abstract or speculative opinion. It has not been uncommon in medical writings to oppose the attribute typhous to that of

inflammatory, as if the existence of the one was incompatible with that of the other: but this, like many other prejudices which have the sanction of great names, is founded on theory rather than experience, since, beyond all dispute, a genuine typhus may be complicated with an acute or a sub-acute inflammation. It does not follow, because this disease originates from a specific contagion, that it can never be joined with the excitement which produces inflammation; for we have numerous instances of specific contagions occasioning fever with inflammation,—as those which, to mention a few examples, give rise to the Egyptian ophthalmia, the scarlet fever, and the small pox. Yet setting aside analogical reasonings altogether, typhus has been so repeatedly presented to me in conjunction with inflammation, that I am fully confident, to be successfully encountered, it must often be considered and treated as an inflammatory disorder. Yet, desirous to avoid rashness on the one hand, and timidity on the other, I shall endeavour to show when venesection is proper, and when improper.

It is in the acute species of inflammation, sometimes commencing on the first, second, or third day of the second stage of typhus, for which, provided it be seated in a part of vital importance, venesection is indispensable. At an early period of such cases, the strength is suppressed, but not subdued; and as the great suppression is then principally the effect of the topical disorder, venesection, by diminishing or removing that disorder,

diminishes or removes the load which impeded the vital functions; and the strength, compared before and after the operation, is therefore increased, instead of being lessened, a fact which I have frequently noticed. But it must never be forgotten, that general blood-letting is only advantageous, or even admissible, in the beginning or acme of the acute inflammation, because when it has existed for a few days, it is almost invariably combined with universal exhaustion; and venesection will then hardly ever remove it, but contribute to precipitate the patient to the grave, by its powerful impression upon the whole system. When called, therefore, to any case of typhus, complicated with an acute inflammation, the practitioner should ascertain, as precisely as possible, the duration of the latter, and the state of the general system. If the topical affection has been but of short continuance, and the vigour of the constitution be merely weighed down, and not really exhausted, let him discard the fears associated with false doctrines, and promptly abstract blood, according to the seat and extent of the inflammation, and till the local pain and general oppression be relieved. But if, on the contrary, the topical affection has continued for some days, and there are symptoms of a present or an approaching collapse, let not the evidences of any local derangement induce him to hazard general venesection, as he values the life of the patient, and his own reputation. I have been often consulted in typhus, at the critical moment when the

inflammation had advanced so far as to render the propriety of decided practice very questionable, and yet not entirely to preclude the employment of depletion. In such instances of uncertainty, it may be assumed as a principle, that local is preferable to general blood-letting; and in conjunction with blisters and purgatives, it will sometimes surpass the expectations of the practitioner. There are circumstances which will even justify the simultaneous employment of local blood-letting and diffusible stimulants in typhus; as for example, when the stage of collapse approaches, and the head or chest, from the previous one of excitement, has become oppressed with an engorgement of blood, which is rapidly overpowering the vital energy. In such lamentable instances, although blisters, laxatives, and mercurials, may be conjointly serviceable, the immediate chance of relief is from the local abstraction of blood, by leeching or cupping, and the exhibition of wine; the first with a view to relieve the topical accumulation, and the last to support the system under the evacuation. What was formerly said about the combination of purgatives with cordials in the last stage of simple typhus, may tend to illustrate the union of these seemingly inconsistent, but sometimes efficacious means, against the conjoint use of which the ingenious Dr. John Brown has so indiscriminately protested.

General and local blood-letting, then, it will be perceived, are sometimes absolutely necessary in typhus; at the same time it must be recollected,

that though the reduction of an acute inflammation may be paramount to every other consideration in the treatment, yet the system cannot bear so large and repeated losses of blood in this fever as in simple acute inflammations, such as gastritis, unconnected with contagion. In support of this opinion, I might confidently appeal to the results of my own practice; but proofs must be familiar to every unbiassed and experienced physician. We may indeed have ocular demonstration of the fact, by attending to exernal inflammations complicated with the genuine typhus, which are well known to require a less abstraction of blood than those conjoined with an ordinary fever. Nevertheless, the distinctions of typhous and inflammatory fever have, in a practical view, been insisted on too forcibly by many authors, who erroneously conceive, that these affections require almost opposite modes of cure; whereas they have many appearances in common, and are remediable upon similar principles. Nothing perhaps can be of more practical consequence, than to note accurately the various stages of acute diseases, from their commencement to their termination; for unless this be done, the disputes may be endless about their modes of treatment, which must correspond to the leading phenomena of each stage. In all fevers of an open character, or in which heat and arterial re-action are developed, there are, to pass over the first, two grand stages, one of excitement, and another of collapse; and it is in the former that depletion is so excellent, while

it is always dubious, and often extremely dangerous in the latter. In violent cases, the stage of excitement soon passes away, and then come those malignant symptoms, as its effects, which, viewed independently of the preceding one, have contributed to mislead so many pathologists and practitioners. Let the circumstances under which remedies are used always be carefully noted, and the points at issue, in regard to the treatment of fevers, will soon be satisfactorily settled.

When the presence of an acute inflammation in typhus imperiously calls for venesection, the first operation should be made as effectually as possible, for the reasons already advanced. The change which a temporary suspension of animation produces, is often strikingly beneficial in phlogistic diseases. Fully satisfied of this, it has long been my practice to order patients, labouring under acute inflammations of the viscera, to be bled until some faintness supervened, that syncope if possible might be insured after the blood has been restrained. But, as in the ordinary manner of performing venesection, syncope can only be caused by very copious depletion, it is a desideratum in the treatment of the inflammatory typhus, to induce it with as little loss of blood as possible; and this may be best acccomplished by bleeding from a large orifice, the patient standing, properly supported, erect upon the feet; for ten, twelve, fourteen, or sixteen ounces taken away in that position, frequently have the desired effect, under all the forms of the inflammatory typhus. When there

are obstacles in the way, to prevent the performance of venesection in the above manner, it may be done while the patient is placed on the breech, with the trunk perfectly erect; for even in that posture, faintness will come on much sooner, and consequently with a smaller loss of blood, than when the body is recumbent. Or the vessel may be opened as the patient lies flat upon his back, and about five or six ounces allowed to flow, when his trunk should be suddenly elevated to a right angle with his lower extremities, and this will often cause an immediate degree of sickness, and soon lead to faintness. In some plethoric subjects, however, it is often desirable, that the vessels should be relieved of their extreme fulness, and therefore it is best to bleed them supine, as more blood can be obtained in that than in any other position. On the contrary, in weak or highly irritable habits, when it is frequently of the utmost consequence to save their strength for an ultimate struggle, we should use every expedient in our power to make the loss of blood as little as possible, without stopping short in the reduction of any topical inflammation, and this ought especially to be considered in typhus, since the fever may run a determinate course even when the inflammation has been arrested. This is one argument which might be brought amongst many others to prove, that fever is not dependent on inflammation for its existence, as some of the most enlightened pathologists now contend. But that the inflammatory typhus, like the simple, may be

extinguished in the commencement, the following cases will exemplify, and many others in my possession could be adduced in support of this point.

Mr. Cavel, an intelligent pupil of mine, exposed himself much to contagion, by remaining long about the patients, while he assisted me in taking notes of extremely severe cases. For several days prior to the coming on of the urgent symptoms, he felt considerable inability to perform any accustomed exercise of mind, having no inclination to move, unless compelled from absolute necessity. He had, besides the loss of muscular power, some slight pain in the head, with soreness of the throat. On the 16th of the month, while in the street, he was attacked with a most violent pain in the head, back, and limbs, attended by great languor and oppression. The soreness of the throat increased, the skin became hot, the tongue foul, the eyes blood-shot and glary, and pressure over them gave much pain. His pulse in the evening was 138 in the minute, strong and hard. On the morning of the 17th, it was 127, and still hard, and he was bled, while it yet continued at that rate, to the amount of about twenty-four ounces, which altered it but little in frequency, though it became not so resisting as before. In the evening of that day, the fever running high, he was bled to about eighteen ounces, when his pulse sunk to ninety; but though it rose a little afterwards, all pain of the head left him till the morning of the 19th, when it returned and was accompanied with considerable giddiness. These symp-

toms were removed by another bleeding to the amount of eighteen ounces, from which time he had not any return of fever, having taken no medicines, except purgatives to relieve the bowels. Mr. Cavel, without being stout, was muscular and well-organized, and though he lost sixty ounces of blood in the three operations, and was very freely purged, yet he soon regained his former strength and activity.

Not very long afterwards, while considerably fatigued, I sat down on the beds, for some visits successively, in taking notes of the cases of typhus which were under my care. In a few days, I experienced an exceedingly uncomfortable weight about my stomach, attended by a capricious state of the appetite, clammy tongue, languor, and occasional chills. These feelings increased for three days, when a dull head-ache came on, and a great disinclination to muscular and mental exertion; but having some important duties to perform, I dragged myself about for four days longer, though at nights I obtained little sleep. On the Sunday morning a greater effort than usual was necessary to force myself into action, but I prescribed for several cases of typhus and also for some of the puerperal fever, in two public Institutions which I then attended; and in returning homeward, excessively exhausted, I was suddenly attacked with great pain, and swimming in the head, while so overpowering an oppression came over me, that I felt as if I should have fallen in the street. With considerable difficulty I reached a carriage not far dis-

tant, but the rattling of the wheels upon the pavement so greatly increased the uneasiness in my head, that, in order to avoid it as much as possible, I was obliged to be driven a very round-about-way to my house, which I reached about five o'clock in the evening. The pain in my head was then so intolerable, that I rashly took sixty drops of laudanum, and went to bed soon afterwards in a state of strange confusion. This dose shortly threw me into a disturbed sleep, in which I had the most horrible dreams. About ten o'clock I awoke with an almost indescribable sensation in my brain, but I endeavoured to rally the mental power which I had left, and, by repeated efforts, commenced an examination of my symptoms. It felt to me as if an immense weight were pressing down the bones of the head, and as if the brain were re-acting against this pressure, by violent and rapidly successive throbs; and these sensations were much augmented by attempting to move my head, which brought on a severe giddiness for some time afterwards. On pressing my fingers over my eye-balls, each was very tender, and both noise and light were exceedingly offensive; but finding, that a succession of human figures passed before me when left in the dark, I requested that a faint light might be kept in my chamber. My tongue felt dry and rough, my skin seemed pungently hot, my pulse was exceedingly rapid, and somewhat resisting; but the cause of all the disease seemed fixed in the brain, for I had no uneasiness in the spine, chest, or abdomen. My feelings

most forcibly convinced me, that I laboured under inflammation of the brain, and I desired that a surgeon might be sent for, to bleed me copiously without delay. About eleven o'clock, while my brain gave me the sensation as if it were almost bursting from fulness, I was bled for the first time, till I nearly fainted, and immediate and great relief succeeded: but as the blood drawn, which amounted to eighteen ounces, was buffy and cupped, my medical friend requested to bleed me again, and as soon as the faintness left me, twelve additional ounces were abstracted, which nearly induced syncope. After the second bleeding, very little uneasiness remained in my head, and the overwhelming oppression, under which I before laboured, now almost entirely vanished, so that in fact the loss of thirty ounces of blood really seemed to recruit my strength. Ten grains of calomel with about the same quantity of jalap were given to me, and a mixture of salts and senna was repeatedly administered in the night, till copious evacuations by the bowels succeeded. My feelings throughout the whole of Monday were comparatively comfortable, and nothing indicated any disturbance in the brain, except a sensation of lightness, augmented on moving the head. Before the first bleeding, my pulse, I was told, ranged above 140 in the minute, but it was somewhat under 100 all day, and as night approached I had a disposition to sleep, and obtained some, broken however by disagreeable dreams. On Tuesday morning, hardly a symptom

of disease appeared to me to be left, but several friends calling to inquire after me, I conversed a little with each, and towards the afternoon found myself exhausted and restless, and I had an excessive thirst. As the evening advanced, whenever I closed my eyes I was harassed with a succession of human figures; but it was remarkable, that none of these were representations of the persons who had visited me, all having faces, with one exception, which I had never before seen. The former sensation in my brain returned, and became so distressing, that I covered my head with a napkin steeped in cold water, but it gave me no relief, and the night was passed in strange and restless confusion. On the Wednesday morning the affection of the brain was if possible more urgent than ever, and I felt so exhausted, that if it had been to save my life, I scarcely think that I could have carried a cup full of water to my lips. At an early hour, a medical friend paid me a visit, and I requested him to bleed me, having an impression on mind, that I was verging towards a state of stupor from vascular fulness of the brain. As the operation appeared to him necessary, he bled me till I was on the point of fainting, but I believe that perfect syncope did not take place. For perhaps nearly half an hour, however, I had a feeling of utter exhaustion, combined with a creeping coldness, numbness, and tingling over all the body; and it then occurred to me how easily such a state might terminate in death. As soon as I was able, I requested a little wine and water. A

mouthful of this diffused almost instantaneously a feeling of general heat, and the exhaustion gradually disappeared. No uneasiness whatever now remained in my head, and though twenty-five ounces of blood had last been drawn, my strength again seemed to be renewed by the operation. An ounce of West Indian castor oil was prescribed for me, which operated often and powerfully during the day; yet in the evening I sat up with a great deal of pleasure till the bed was made. Soon afterwards I became hot and restless, and about midnight I was in a high state of irritation; but I got out of bed till I grew perfectly cool, and then lying down again, slept soundly, and from that time recovered with rapidity; though for more than a month afterwards very slight causes made my head ache much.

During the whole of my illness I felt very desirous to be able to recollect the symptoms as they arose, and the above is, I believe, a tolerably correct transcript of my feelings, which may serve to show, that under an intense inflammation of the brain, some of the intellectual powers may remain entire. The attack was no doubt rendered much more severe than it otherwise would have been, by my persevering to go about with the incipient disease upon me; and I merely mention this circumstance as a caution to others, for I have known some practitioners lose their lives from a similar procedure. Few men live so much for the public and so little for themselves as medical practitioners; but as a general rule, they should make

a point of resting immediately when attacked with the symptoms of fever, because the arduous duties of their profession may render the mildest seizure dangerous. I have never seen any medical man labour under what is called idiopathic fever, in whom the brain was not less or more affected; and this was probably owing to the previous and almost constant exercise of it as an instrument of thought, by which it unquestionably acquires a disposition to disease. It was remarkable, that during the attack, I had an unceasing desire to be bled whenever the symptoms became urgent. This arose as much from instinct as from reflection; and in severe affections of the brain from vascular fulness, I have known the same desire as strenuously urged from the mere impulse of feeling, by persons who were not of the medical profession. The general oppression was exceedingly great in my case, and probably dependant in a great measure on the cerebral disturbance. If that oppression had deterred my friends from bold depletion, the result would doubtless have been speedily fatal; but so beneficial was the first and the last bleeding, that I felt as if a load had been removed from me as soon as the blood began to flow freely from the arm.

In general, however, I am not an advocate for large and repeated venesection in the inflammatory typhus, having usually seen one or two moderate bleedings sufficient when followed up by purgatives, blisters, leeching, and alteratives; but even whenever so timely employed, whether the

bleedings be large or moderate, they will sometimes fail with every other measure, especially when the inflammation, being removed from one, attacks another organ, which is more liable to happen in typhus than in common fevers. In modern publications it is perhaps too much the *fashion,* if such an expression be allowable in science, to exhibit the successful, and to keep the unsuccessful cases in the back ground; but those who are most fortunate with evacuations in the general result, cannot deny, that there are exceptions to their efficacy sufficient to show, that we still stand in need of considerable improvement. It was the custom of Hippocrates and Sydenham to publish cases of failure as well as of success: and the former might be made fully as useful as the latter, by serving, like charts, to guard others from the mistakes which had been previously committed in practice.

On the publication of the second edition of these illustrations, the largest quantity of blood, which I had ever ordered to be drawn in the inflammatory typhus amounted to about fifty-four ounces. The case occurred in a robust and middle aged man, and was from the commencement attended with pleuritis, though it had originated from contagion. Early on the second day of the attack, twenty ounces of blood were taken from the arm, which produced a marked relief; but in about twelve hours, the inflammatory signs again becoming prominent, eighteen ounces more were drawn, with even a better effect than before, and

the patient appeared to be convalescent for about two days. But having unadvisedly drunk too freely of strong ale, the pleurisy returned, with violence, for which about sixteen ounces were promptly abstracted, and a large blister applied to the side affected. From this time, the pectoral symptoms, with the typhous fever, rapidly receded, though the patient had a tedious recovery on account of the state of weakness to which he had been reduced; and it is deserving of notice, that when there is a relapse of inflammation in some weak part, the recovery is more slow and uncertain than when no such thing occurs. In some instances of pleurisy, arising in genuine typhus, I have seen depletion commenced under as favourable circumstances as in the above, and yet it failed; an embarrassed condition of the brain with muscular tremors supervening, under which the breathing became exceedingly laborious for some time before death. The brain and lungs often seem to have a reciprocal influence upon each other in fevers, especially of the contagious kind, so that it is not uncommon to see the lungs become disturbed from an affection of the brain, and the contrary; but when disorder is once decidedly established in both organs at the same time, the case is commonly dangerous, especially when there is a staring, glary eye, which is always a bad symptom even when the brain alone is affected. In that species of inflammation which attacks the bronchia, the lancet should not be employed, even in young and robust subjects, with the same

freedom as in inflammation of the pleura; and when it attacks weak habits, or persons advanced in life, still greater care is then necessary, for in such, the loss of much blood will sometimes be speedily mortal, though in the beginning they generally bear local bleeding and blistering with advantage. In most pulmonary affections, and particularly of the bronchia, the warm bath is a remedy of considerable power; and the pectoral symptoms will commonly be greatly alleviated whenever the skin is moist, so that a regulated temperature and sudorific diluents are useful, such as tepid weak tea, or diluted lemon juice.

Yet in almost all cases, if the constitution be good, in which there is manifestly a preternatural accumulation of blood in a part of importance, attended with an universal excitement, general blood-letting should be adopted first, and where that fails, local afterwards. Because the general blood-letting, if carried sufficiently far, will immediately diminish that violent action of the heart and arteries by which the inflammation is chiefly maintained; while the local blood-letting will make a still further impression on the heart, and may likewise induce a change in the state of the part affected, on the principle of sympathy or revulsion. Since the first edition of this treatise passed through the press, I have made many experiments as to the power which local blood-letting has over the action of the heart, and have found it infinitely greater than I had previously supposed; so much so indeed, that I am now induced

to believe, that the *principal* efficacy of local blood-letting rather depends upon this than any other cause. In the course of these experiments, too, a remarkable and unexpected fact was presented to my observation : namely, that the action of the heart may frequently be weakened by small quantities of blood abstracted by leeches, when moderate or larger quantities would be required to produce a similar effect by venesection from one large vessel; but this, however, is more especially the case when the excitement does not run intensely high, and in all examples where it does run intensely high, the general should always precede the local bleeding. Thus if the chest, or the belly be the seat of the inflammation, a vein may be opened at the arm ; and as the benefit is generally greatest when the blood is rapidly abstracted from a great vessel, the orifice should be made very large. This is a point of the first importance, and ought never to be neglected in inflammatory affections of an urgent nature. About an hour after decisive venesection, several leeches may be applied over the integuments of the chest or abdomen, nearest to the site of the uneasiness; but as in visceral affections, the principal efficacy of local blood-letting depends upon its influence on the heart, it should be continued until it sensibly weakens the action of that organ, which may be known by its lessening the force or the frequency of the pulse. And though it may seem surprising from the comparatively small quantity of blood which they abstract, yet practitioners

will generally find the pulse reduced immediately on the removal of several leeches from the skin; and where this effect is not observable at that time, glasses exhausted of air should be applied over the punctures, until an evident reduction of the pulse succeeds. The cupping glasses, invented by Mr. John Welsh, surgeon at Haddington, answer uncommonly well, as I have proved by many trials, though they are merely exhausted by suction with the mouth;* and this method is generally preferred by patients, but especially in febrile diseases, to the ordinary mode of cupping and scarifying, over which it has one very obvious advantage, since it does not add the stimulus of pain to the febrile irritation. But nevertheless, where a considerable and rapid detraction of blood from the skin is required from the urgency of some threatening symptom, cupping and scarifying may be preferable, on account of the greater saving of time.

When an acute inflammation of the brain or its appendages has taken place in typhus, I have usually bled from the arm first, and where that did not give decided relief, recommended the instant opening of the temporal artery as the best mean of local blood-letting; and the happiest effects have often followed these two methods used in quick succession, but especially when cold cloths have been freely applied to the head at the same time.

* For an account of these very useful glasses, see vol. xi. page 193, of the Edinburgh Medical and Surgical Journal.

Dr. Stoker introduces an interesting fact, on the authority of an experienced surgeon, who, "scarcely in any instance, when opening the temporal artery is prescribed for patients in fever, fails of taking as much blood as may be required; though during forty years, in which he has been surgeon to the County of Dublin Infirmary, he found the operation generally unsuccessful when directed in other diseases, either from the difficulty of puncturing the artery, or of getting a sufficient quantity of blood from any orifice that could be made." * In almost every instance, where the brain is seriously affected in the open forms of typhus, the arteries of the head will be found much more distended and pulsating than natural; thus at once affording a strong evidence of vascular excitement, and a much greater facility to the topical detractions of blood. The anterior branch of the temporal artery may be opened where local blood-letting is expedient, at a short distance from the trunk, which, in more urgent cases, may itself be punctured, a little below its separation into the anterior and posterior branches. When the operation is done on the anterior branch, the vessel ought to be divided after a sufficiency of blood has been drawn; but when the main trunk of the artery has been opened, it should be taken up in the usual way, otherwise there might be the risk of hemorrhage, or of a future aneurism. Surgeons often fail in abstract-

* See page 27 of Dr. Stoker's Treatise on Fever.

ing as much blood as is wanted from some part of the temporal artery, not because it is absolutely impossible to obtain it, but because they divide, instead of puncturing the artery slightly obliquely lengthways. In inflammatory affections of the cerebrum, some have conceived, that if, instead of the temporal artery, the external jugular vein be opened, you abstract blood returning from the brain, and directly relieve the inflammation, by removing a portion of that which produced it, and thus clear the channel for a freer transmission of the remainder to the heart. It seems to have been forgotten, however, that this reasoning is only applicable to the *internal* jugular vein, for what *immediate* connection has the external one with the brain? Perhaps no peculiar advantages result from performing the operation at the external jugular; but in very young subjects it may be sometimes more easily punctured than the veins in the arm.

In all acute inflammations, seated in vital parts, it is of great consequence neither to confide entirely in one powerful measure, nor in a combination of secondary means;—but rather to employ, from the first, the most approved antiphlogistic agents, successively or together, that their influence may be so exerted as to produce a complete change in the circulation of the blood, with the least possible loss of time. Most of the ancient physicians, and even Sydenham himself, trusted to venesection in the first instance, and the expedients which they afterwards used were

comparatively inert:—but under this plan many cases might prove mortal, which would be readily arrested by a judicious conjunction of active remedies. The free exhibition of purgative medicines, with or without venesection, is one of the greatest improvements in modern medicine, as it respects the cure of acute fevers: and if, to the agency of those two means, that of calomel as an alterative be added, we give a summary of what ought to be attempted, not only in the inflammatory typhus, but in all the varieties of acute visceral inflammations. Nevertheless, how superior soever be the united efficacy of bleeding, purging, and mercurials, there is yet an application that should not be disregarded. Much contrariety of opinion seems still to prevail, relative to the propriety of using blisters in typhus. If my observations be correct, they should not be employed in the inflammatory variety, until evacuations have been premised; otherwise they will commonly excite a general irritation, which will more than counterbalance any local advantage derived from them. I have, however, generally seen them exceedingly serviceable, when applied to the vicinity of the topical affection, soon after the employment of venesection and purgatives. It also deserves to be noticed, that they should hardly ever be recommended at a very late period, when the exhaustion is excessive, except where there is a tendency to coma, when they sometimes contribute to rouse the latent energies of life: on the whole, I conclude from what I have

observed, that, when properly used, they are even more beneficial in typhus than in common fevers, especially when subdued degrees of inflammation or irritation exist in a vital part. When the spinal cord is inflamed, blisters are peculiarly serviceable, and they should be applied repeatedly over the vetebræ where most pain exists, and also to the pit of the stomach. If the patient be seen early, blood should always be drawn before their application, and purgatives continued steadily afterwards until the symptoms entirely abate; but as the constitutional powers sink very soon under inflammation of the spinal marrow, the lancet should either be withheld, or most guardedly used when the inflammation has continued for some days, and then indeed blisters and purgatives will mostly be decidedly preferable.

My experience does not enable me to speak with perfect confidence concerning the general effects of the affusions of cold water, in the inflammatory typhus. It would be most unreasonable to expect, that they should prove as highly efficacious in it as in the simplest form of the disease; yet their application in both probably requires to be regulated by the same principles. In the inflammatory typhus the heat is almost always above the natural standard, but the skin, particularly when the abdominal viscera are affected, is frequently moist, while there are distinct sensations of chilliness. A combination of such symptoms preclude the cold affusions, but not the warm bath, for it may be beneficially used after

bleeding and purging, as it has a power of equalizing the circulation, by inducing a flow of blood towards the surface. In some cases of typhus, which were complicated with cerebritis, and in which the skin was very hot and dry, I have seen the cold affusions used with evident advantage, *before* bleeding and purging. But if any practitioner should flatter himself that they will, unassisted, subdue a fixed visceral inflammation in typhus, he will find his hopes utterly fallacious; —although, if applied when the surface is preternaturally hot and dry, and no sense of chilliness present, they will often lessen the intensity of the excitement, and thus add to the power of the subsequent depletion. I am persuaded, that they should seldom be employed in typhus *after* copious venesection, which reduces the vigour of the system too much to enable it to maintain a proper temperature under their application. In the north of England, it was not uncommon for typhus to be combined with catarrhal symptoms; and when those symptoms have not been urgent, I have found that they did not preclude the use of the cold affusions, but, on the contrary, yielded to their application, in conjunction with purgatives and blisters. Notwithstanding all that has been written, it still remains for future inquirers more fully to ascertain, in what modifications of inflammatory affections the cold affusions ought to be used, and in what rejected. Simple and philosophical as the principles of Dr. Currie are, when limited to some forms of typhus and the scarlet

fever, yet they are not alike applicable to some other febrile diseases; at least I shall afterwards particularly consider one, produced by intoxication, in which the aspersions of cold water may be used with success, when the whole surface is covered with perspiration, a circumstance which he imagined entirely to prohibit them.

Most of the preceding remarks are intended to refer to typhus, combined with the acute species of inflammation. It is incumbent on me, however, to guard the practitioner against carrying depletion too far, even in the acute form of the inflammatory typhus. When a decided impression has been made upon the topical affection, we should desist from the employment of very active measures, and either leave nature to exert her own energies towards restoration, or to second them by moderate treatment. It cannot be too often repeated, that the system sooner sinks under depletion in typhus, than in merely common fevers; and this is an important peculiarity of the disease which should never be lost sight of by the medical attendant.

The acute inflammations of typhus sometimes originate from causes, which neither the physician nor the patient can control, and by the rapidity of their progress endanger life from the very onset. But this is not altogether the case with the subacute kinds of inflammation which, being the gradual results of the increased action of the heart and arteries, may often be prevented by timely care, and which, when actually formed, may pro-

ceed for some days, before they bring life into immediate hazard. The prevention of these latter affections may be best effected by frequently taking a cautious and comprehensive view of all the symptoms, so that if any part be threatened by an attack, it may be immediately warded off by local blood-letting, blisters, purgatives, or similar means. Thus if there be too great a determination of blood to the brain, the patient should either be frequently placed in an easy chair, as Sydenham recommends, or the bed upon which he lies should be raised at least eight or ten inches at the top, by placing blocks of wood under the upper poles, that he may rest on an inclined plane, with his head considerably elevated. And this simple precaution, with the free admission of cool air, cold applications to the head, the exclusion of light and noise, brisk aperients, and perhaps a few leeches to the temples, will frequently prevent an attack of inflammation. If the pleura, lungs, or mucous membrane of the trachea be pre-disposed to inflammation, leeching or cupping, a blister afterwards, small doses of antimonial medicines, and saline purgatives, will be amongst the best preventives. If any of the abdominal viscera be threatened, the warm bath, large cathartic enemata, a tolerably full dose of calomel, determined to the bowels by the sulphate of magnesia, and the abstraction of a few ounces of blood from the surface of the belly, will often obviate the necessity of having recourse to more active expedients. When the subacute inflammation really exists, it

will be best overcome by a suitable perseverance in the antiphlogistic plan. One moderate bleeding from the arm will be generally necessary, after which local blood-letting, blistering, and purgatives, in combination with mercurials, for the most part will suffice to effect the cure. General venesection, or arteriotomy, may be recommended with propriety at a much later period than it would be adviseable in those cases of typhus which are complicated with the acute form of inflammation; for when the topical affection does not advance so quickly, the supervention of the stage of collapse is proportionably delayed. In an instance of this kind, which lately came under my inspection, the subject of it sickened on the eleventh day of the month, and gradually became worse, until the nineteenth, when my first visit was made. The patient was then extremely restless, shrunk on forcible pressure being made over the abdomen, which was somewhat fuller than natural, and he complained of an unquenchable thirst, with a constant burning heat at the stomach. Purgative medicines having been previously exhibited without arresting the complaint, I ordered a vein to be immediately opened at the arm, and, placing the patient in the erect position, allowed the blood to flow till it was stopped by approaching syncope. About ten ounces of blood only were drawn, the crassamentum of which became extremely cupped and buffy; yet the relief obtained was permanent, and the recovery rapid, through the assistance of a blister, and purgatives of ca-

lomel and jalap. In this case, blood was abstracted on the ninth day of the fever, with the most obvious utility; and on some occasions I have seen the temporal artery punctured to great advantage at as advanced a period, when the head was oppressed by a sub-acute inflammation of typhus. My experience does not enable me to limit the time at which the lancet may be employed in such affections, but the earlier the better, when the evidences of visceral inflammation are once sufficiently revealed. The case above is not brought forward to show that phlebotomy may generally be adviseable at so advanced a stage of the disorder, but merely to prove that it may sometimes be resorted to with advantage, even when the sub-acute inflammation has been allowed to proceed far without any decided interruption. Though some modern authors have recommended, as Langrish did in the last century, repeatedly small general venesections several days later than in the instance reported, yet at such a time, I cannot but consider this practice as exceedingly dubious, and would myself prefer, in most cases, the occasional use of local bleeding. After a few of its diurnal revolutions, the stage of excitement begins to decline, and symptoms of universal collapse appear, during the existence of which it is extreme rashness to use general blood-letting. Indeed, the blood taken from a large vein is then frequently in a thin dissolved state, so that it remains a fluid gore, without coagulating; and whenever this is observed,

it is the most certain proof that the operation has been done at an improper time. Unfortunately, the physician is often consulted in febrile disorders when they have become all but desperate by their long continuance, and if he should attempt to save the patient by a daring measure, will generally have the mortification of seeing him sink rapidly after its employment. In the worst cases of this kind, powerful expedients are hardly ever admissible, for where they once succeed, they will fifty times fail; and perhaps all that is left in general for the practitioner to perform is, to give a conscientious prognosis, and, if possible, to palliate the predominant symptoms.

For some years past, I have closely directed my attention to the effects of purgative medicines in hepatic, gastric, and other abdominal inflammations; and the result has been most satisfactory, particularly in the sub-acute modifications, sometimes commencing with typhus, but far more frequently originating during the progress of the fever. In affections of this kind, it will very often be found, that the bowels have been constipated, or in an irregular state before or during the attack, which makes it necessary that they should be as speedily and thoroughly opened as possible; but on account of the irritability of the stomach, this cannot always be accomplished without difficulty. The contents of the lower part of the intestines should first be evacuated by large and repeated injections, containing at least a quart of fluid; but if twice that quantity, or even more

can be administered, it will be still better, provided much feces be retained. The benefit resulting from large enemata, injected with a sufficient force, from a suitable syringe, or an ox's bladder properly fitted up, has not been rightly estimated; but, from repeated trials, I can recommend them as remedies truly worthy of notice in abdominal inflammations, often inducing copious motions in a very short time, and contributing to allay retching and vomiting, so that the medicines afterwards prescribed will not be rejected by the stomach. But their effects in general are not sufficient, and therefore aperients should be ordered immediately after their operation, to act upon the whole course of the canal. Under such circumstances, small doses of certain drugs, especially of calomel, are as liable to be rejected as full ones; and even when retained, they either do not operate at all, or only very defectively, and may do much more harm than good, by their immediate irritation, and by occasioning a loss of time, every moment of which is precious in the beginning of such disorders. Full doses of purgatives, therefore, should be prescribed, which may not only remove the excrementitious matters from the bowels, but cause some evacuation of serum, and thereby produce all the advantage of a local abstraction of blood. Aperients should be most freely given in inflammations of the brain, and next in those of the abdomen, because they have a great power in deriving the fluids from these parts, but particularly from the brain, so that

the face of a person under the full operation of a purgative is usually pale. In inflammations of the brain, the saline purgatives upon the whole are the best, as they elicit a more copious discharge of serum, but they should generally be premised by calomel, for when the brain is inflamed the functions of the liver will usually be much disturbed at the same time. When the bowels are actually inflamed or threatened with inflammation, it is highly important that they should be thoroughly evacuated, as they then are usually loaded with fecal matter; but when they are once thoroughly cleared, the milder purgatives should be preferred, especially the cold-drawn castor oil, which when good mostly operates freely with little or no irritation. As copious and frequent purging has a tendency to diminish expectoration, it should hardly ever be enforced in thoracic inflammation, but more especially when the mucous membrane of the bronchia is the seat of inflammation; because very copious purging then not only checks the expectoration, but it most frequently prevents a perspirable state of the skin, which is always most desirable in affections of the bronchia. Yet the bowels should be moderately moved even in thoracic inflammations, particularly when the brain and liver are implicated, as often occurs in typhus; and in this combination of disease, the preparations of antimony sometimes have an excellent effect, when so managed as to arrest the heart's action, and to promote a certain degree of nausea, which is favourable for expectoration, as

well as for a moist condition of the skin. When the trachea is inflamed, or when the bronchia are exceedingly loaded with phlegm, an antimonial emetic is sometimes extremely useful, both by expelling the collected mucus, and influencing the state of the whole vascular system, particularly the capillaries of the affected membrane, and those of the surface; but when the brain is embarrassed by any degree of inflammation in such cases, it will generally be necessary either to premise general or local bleeding in the beginning, with the cautions before inculcated as to this combination of symptoms. In slight catarrhal affections, the temperature may be kept low in typhus, so long as the skin shall remain hot and dry; but when the tracheal or bronchial lining is at all seriously involved, the temperature of the apartment should be carefully regulated; for if it be too low, it will aggravate the tracheal or bronchial affection, as well by its direct stimulus on the part, as by operating unfavourably on the skin. Those who carefully attend to affections of the trachea and bronchia, will find it a point of the first importance, that patients should breathe and be surrounded by an atmosphere of a mild temperature.

In the chronic species of the tracheal affection before described, which is now and then the attendant of typhus, early emetics of antimony, leeches and blisters successively applied near the larynx, laxatives, small doses of calomel and opium, and moderate ones of the balsam of copaiva, with

an occasional tepid bath, free ventilation, and an abstemious regimen, are the best means. In the advanced stages, however, of this modification of the disease, I have not seen any thing available; although Mr. Croudace, whose case was formerly alluded to, recovered when extremely emaciated, on being removed to an airy situation in the country. The first articles which stayed upon his stomach were light hasty pudding, and a little milk, to which, and the influence of a pure atmosphere, he chiefly attributed his recovery.

From what has previously been said, it is scarcely necessary to add, that the strictly antiphlogistic regimen should be adopted in the inflammatory typhus, at least till the urgent symptoms be overcome. And even when the remission has been obtained, the practitioner should still direct a light, cooling diet; for it is well known, that when any part has once been inflamed, it is for some time afterwards very susceptible of the same disturbance. Moreover, in almost every case, in which the system has been much depleted, a reaction of the heart and arteries takes place during convalescence, which may be readily pushed on, by too stimulating food, to re-produce fever and inflammation. For want of attending to this, not only open and palpable inflammations may be occasioned by errors of diet, but insidious and concealed affections of the viscera or their membranes, which lead to dropsies in the cavities, or to actual disorganization. Other powerful auxiliaries are not needed when bleeding and purging rapidly

remove visceral inflammation, and the typhus either at once ceases with the inflammation, or assumes a simple character, and requires a correspondent treatment, due allowances being always made for the previous evacuations, and the constitutional state of the patient. Because bleeding and purging are thus successful in certain cases, some would go so far as to contend, that in acute inflammation they invariably preclude other measures, with the exception of local bleeding and blistering; but it is well known, that bleeding and purging sometimes entirely fail to arrest the inflammation, and at other times to leave subdued degrees of it, and are we then to suppose that nothing efficient can be done in such instances? Where the impressions of bleeding and purging have not been decisive, it has been my common practice to prescribe calomel so as to ensure its specific as well as its aperient action; and when pain or irritation existed at the same time, I have almost always conjoined opium with it, except where the brain was obviously embarrassed. Yet meaning to enter fully into the consideration of the effects of this combination, under the head of the common continued fever, it would be superfluous to dilate upon the subject here.

It sometimes happens in the inflammatory typhus, as in other complaints of a similar character, that the inflammation relapses after it had been apparently subdued, and this is more especially the case, when the lungs are the seat of the inflammation. When the constitution is not

exhausted, we ought not to be deterred from the use of the lancet on the recurrence of the urgent symptoms; and local bleeding, with blisters to the chest, will be particularly serviceable as secondary means, on account of the influence of small abstractions of blood by leeches over the heart's action, and of the free anastomoses of vessels between the external and internal parts of the thorax. It is a remarkable fact, that I have seldom seen relapses of inflammatory diseases where the bowels were kept regular, where the mouth was affected by mercury, and where the diet was antiphlogistic at the same time; and I cannot but believe, from the consideration of many cases, that relapses would be much less frequent in vital inflammations, if these circumstances were more generally regarded.

Sometimes when local inflammation has been subdued in typhus, a state of great mental and bodily irritation succeeds in peculiarly susceptible habits. After a remission of two or three days, the skin again becomes pungently hot, the pulse quicker, the tongue drier; and, particularly towards the evening, there is a bright hectic flush upon the cheek, while the countenance has an expression of suffering. The patient is fretful, complains of fugitive pains in different parts of his body, and often sighs, as if he were labouring under some serious affliction. His sleeps are at first short and agitated, attended with mutterings or startings, and he awakes unrefreshed and anxious as before. In a short time he becomes watchful and delirious at nights, and has a rough, parched

tongue, trembling hands, ferretty eyes, and is impatient of light and noise. If opportunely employed, the warm bath, active purgatives, and small repeated opiates, are often remedies of great power in this secondary fever of irritation. The evening exacerbation is the best time for using the bath, in which the patient should be immersed for about fifteen minutes; and immediately after his removal to bed, he should take about twenty-five drops of the tincture of opium, and, being thinly covered, ought to be kept in a still, dark chamber. If the first opiate should not induce rest, the same dose may be repeated in about six hours; one great object in the beginning of this disorder being to procure long and tranquil sleep, which is frequently the best restorative. If the skin should continue hot and dry throughout the day, the warm affusions may occasionally be applied, and fresh cool air liberally admitted. Milk is perhaps the best general diet, but when animal broths do not stimulate too much, they may also be given in moderate quantities. This kind of fever sometimes passes on to hectic, without the formation of matter any where, and sometimes imperceptibly leads to slow organic affections, circumstances which much more commonly arise out of the inflammatory, than the simple variety of typhus.

When the first edition of these illustrations had passed nearly through the press, some highly valuable remarks were published by my friend Dr. Dickson, respecting a contagious fever which prevailed in the Russian fleet. Circumstances con-

spired to prevent me from seeing that paper at the time, otherwise it should have been noticed, on account of its merits and of the strong corroborations which it afforded to the pathology and treatment which I had laid down in the inflammatory typhus; and as the observations and experience of that enlightened physician were personal and independent as my own, the coincidences of opinion and practice are peculiarly gratifying to me, in now referring to his excellent paper.* Dr. Dickson observes, that the appearances on dissection were strongly illustrative of the frequency of visceral inflammation, in the fever which he saw and described; for the brain, lungs, and contents of the abdomen were severally found to have been attacked, among those who were the victims of this disease. From reflection on numerous facts, it seemed to Dr. Dickson, an inevitable conclusion, that those remedies which arrest inflammation at the commencement, prevent the graver and malignant symptoms, which characterize the last stage of such fevers; and this conclusion was amply borne out by the results of his practice, since bleeding and purging at the beginning were generally successful. Dr. Dickson, too, was convinced, like myself, that bleeding decisively as to effect is preferable in the main run to small repeated bleedings, in the beginning: yet he appears to be fully sensible, that there are cases where the constitutional powers are so ex-

* See vol. xii. p. 158, of the Edinburgh Medical and Surgical Journal.

tremely weak, or where the inflammation has advanced so far as to have exhausted those powers, in which small occasional bleedings are the best; but in illustration of this particular point, few works can be consulted with more advantage than that of Dr. Mills, which certainly contains many practical observations of the highest importance. At the same time, I am fully confident, that general blood-letting cannot be used so late in the genuine typhus, as in fevers which proceed from causes which are not possessed of a contagious property; and from want of due attention to this distinction, it forcibly strikes me, that many serious mistakes have been committed in some modern publications, where typhus is perpetually confounded with the common continued fever, hereafter to be noticed.

Before concluding my remarks on the inflammatory typhus, I must strongly warn the speculative and the inexperienced from rashly concluding, that inflammation exists in every instance in which the head, chest, or belly are seemingly affected, since opinions deduced with precipitation, from a few leading symptoms, may often be extremely deceptive. In a populous district, I have not unfrequently been called to typhous patients in a state of high delirium, with dry, burning skin, parched tongue, flushed face, and red eyes, covered with a load of bed-clothes, confined in close, heated chambers, and allowed the most improper beverage and diet. On freely ventilating the rooms, extinguishing the fires, removing the su-

perfluous coverings, using the tepid affusions, and ordering purgatives and an antiphlogistic regimen, I have seen a most salutary change induced in a short time, which has been rendered permanent, by a perseverance in these very simple means. Other patients again have come under my care, who had been treated, in the first instance, much in the same way as those just noticed, some of whom were troubled with cough and oppression of the chest, and some, whose bowels were loaded from neglect, with uneasiness and tension of the belly;—but on prescribing a blister for the first, and a brisk purgative for the last mentioned, with the cooling regimen in both, all the disagreeable symptoms have given way, and recovery has speedily followed. None but those who have had opportunities of contrasting the cooling, antiphlogistic treatment, with the hot and stimulating, can duly appreciate the superiority of the former; or indeed be aware what a pleasing amendment may be frequently produced, in mismanaged patients, by the abstraction of heat, noise, and diffusible stimuli, and by the substitution of fresh cool air, sub-acid drinks, a spare diet, and remedies which move the bowels, and lessen general excitement, and what are called local determinations.

There is one point of infinite importance in the treatment of typhus which must be distinctly set forth in this place. It has been ingeniously contended, by some recent revivers of the doctrine of Erasistratus, that what is strictly termed fever

is always the mere effect of inflammation. If this doctrine were practically true, it would follow, that we should persist in the use of those measures which are the most effectual in inflammation so long as the fever shall remain, since, being the pure result of inflammation, it could only cease to exist with its cause; but however excellent and simple such a practice might appear in the closet, it would often be fatal at the bedside, if fully pursued in typhus, and in other febrile affections proceeding from specific contagions. Not long since I attended a case of typhus from the beginning, where the patient was twice bled to syncope for an inflammation of the brain, and a third time to syncope for a subsequent inflammation of the bowels; but though all appearances of inflammation subsided, the typhus itself maintained a determinate duration, the increased heat, quick pulse, and other symptoms of fever continuing for many days afterwards. Now had I taken, in this case, the continuance of the fever as a certain sign of the continuance of the inflammation, the patient instead of having recovered would have been inevitably lost; for after the third bleeding the prostration of strength was so great, that it required the utmost care in regulating the bowels properly on the one hand, and in allaying irritation on the other. Here bleeding was employed under the most favourable circumstances, in the beginning of the disease; it was carried far enough to subdue the inflammation,

but much milder measures were afterwards necessary for the removal of the remaining typhus. Parallel cases have often fallen in my way, though I have seen many where the fever has been extinguished in the onset by these means; and therefore my own observation leads me alike to differ from those who assert that typhus never can be cut short, and those who pretend that it always may, in the commencement. But it is not so much in the very commencement as in the progress of typhus, that the theory of inflammation would be so pernicious in practice. Indeed were this theory made an invariable rule of conduct to practitioners, its strict application would be destructive in most of those cases which have advanced into the intermediate and last stages. In such, though it may be of the first importance to remove an existing inflammation, yet if that inflammation be made the sole object of consideration, or if the evacuations be indiscriminately enforced day after day under an idea, that the presence of fever proves the presence of inflammation, if these things, I repeat, were done at these times, the issue would most frequently be mortal; for in the intermediate and advanced stages of genuine typhus the removal of inflammation will rarely remove the fever, and if in removing that inflammation the evacuations of blood be not then cautiously induced, the patient will at once sink from their influence, or not have sufficient energy left to sustain him under the subsequent fever.

Hence it is that a practitioner might by a bold treatment at the beginning either immediately stop the fever, or so moderate its force as to cause it to assume a mild and an obedient character; and hence, also, it is, that the same plan might be so perilous in the intermediate stages, whereas one generally consisting in the discreet employment of local bleeding, purging, and blistering, would be so successful at that period of the inflammatory, while purging alone would be sufficient evacuation for the simple typhus. At present there are some ultra-phlebotomists, who think that bleeding is the first and the last remedy in typhus, concentrating almost the whole treatment into the reduction of some real or supposed inflammation; and it has therefore appeared to me necessary to caution the inexperienced respecting a measure, which must either be highly useful or highly injurious, according to the period and manner in which it is used. In different parts of these pages, I have insisted strongly on the utility of evacuations in the early stages of this fever, when varied agreeably to the form of the disease, and the peculiarities of the patient; but I must as strongly insist on the necessity of avoiding evacuations to any thing like the same extent when the disease has existed many days, even in its inflammatory form, particularly where the inflammation is sub-acute. After the removal of a few leeches from the skin, I have often seen in fever something like the old doctrine of revulsion and

derivation exemplified, the blood flowing so fast from the adjacent to the punctured parts as to be at last restrained with difficulty; and whenever leeches are therefore directed, but especially to the abdomen where pressure cannot be so effectually applied, the practitioner should witness their operation in the intermediate or more advanced stages, lest too much blood be lost by the punctures continuing to bleed several hours. Excellency in almost every thing consists in an attention to minutiæ; and the life of many a patient may be saved, at a critical conjuncture, by carefully regulating the application of an agent according to its effects. If there be one moral rule of conduct more important than another for a medical man it is, that he should never permit himself to be in a hurry in cases at all serious:—and for my own part I can scarcely imagine any one more criminal than a trading practitioner, who does not allow himself sufficient time for the thorough consideration of the cases, in which he is consulted. But the leading points in the inflammatory typhus having been discussed, the treatment of the congestive remains to be illustrated.

TREATMENT OF THE CONGESTIVE TYPHUS.

In both its simple and inflammatory varieties, typhus is unquestionably a disease of excitement; but this cannot be said of it under its congestive forms, in the most violent of which there is no

intermediate stage of re-action; and even in the less urgent, the evidences of re-action are so partial, transient, or irregular, as hardly to deserve that denomination. Almost every fever has a stage of oppression, however brief it may be, but those cases only deserve to be called congestive, in which it is so great as either wholly to suppress the excitement, or to render it very partial and irregular. Sometimes the stage of oppression is apparently pretty strongly marked for a short time, and, gradually or suddenly receding, is followed by one of regular excitement, so that the disease afterwards runs its course under a simple or an inflammatory character, but more frequently under the latter. The following observations, however, are not designed for such cases, though it may be noticed, that their first stage requires the same principles of cure as are suitable to the strictly congestive fever, and that the subsequent stages must be treated according to the rules laid down for the simple and inflammatory typhus.

If the congestive variety of typhus does not comprehend the different characters of what some authors have been pleased to call the low malignant, contagious fever of this country, I profess myself incompetent to understand their meaning; unless indeed their descriptions be considered as likewise applicable to the last stages of the simple and inflammatory typhus, in which malignant symptoms are often present when those forms of

the disease had not been impeded in their progress. The writings of Dr. Cullen are chiefly valuable for the accurate descriptions which they contain of many diseases, but it has always struck me, that his definition of typhus, notwithstanding its extensive adoption, is very defective; in reality, it is nothing more than an enumeration of some of the leading symptoms, which accompany the last stages of the simple and the inflammatory typhus, and the commencement of the congestive. It at best therefore only embraces a small part of the disease, and neither accurately discriminating stage nor variety, cannot but be dangerous, from the mere authority of his name. In the course of my experience, I have seen a great number of patients afflicted with typhus, and can with confidence declare, that there are no substantial grounds for believing it generally to be a low fever of real debility, when fairly contemplated from the time of its attack; for even in the congestive species, with a few exceptions, the debility is rather apparent than real in the first instance, as will be made evident by the nature and effects of the remedies employed.

Some bad cases have already been given of the congestive typhus, the terminations of which, under the common modes of treatment, were fatal; and one has been particularly noticed, which ended successfully by very early bleeding, purging, and the warm bath. This brief statement nearly accords with the general result of my observations in regard to such examples of con-

tagious fever; since whenever treated, from the beginning, solely by palliatives and cordials, the event has been mortal, whereas a great many have proved favourable in which a different line of practice was pursued; although it must not be concealed, that the most judicious plan will not always succeed in the concentrated attacks of the congestive typhus which, like a resistless apoplexy, sometimes set every remedy at defiance. But if failures of this sort show the occasional inefficiency of depletion, they certainly do not disprove its general utility, since there are cases of other acute diseases, wherein the best measures are now and then wholly unavailable; as might be instanced in carditis, pneumonia, and similar affections, in which no person has the hardihood to dispute the general advantage of early evacuations.

In the severest cases of the congestive typhus, there is from the beginning great apparent debility, which speculative men have considered as real, and which they have attributed to the direct influence of the contagion as a sedative, without ever reflecting that it chiefly depends upon the changes which take place in the circulation; and that it is no more to be accounted positive exhaustion, than the loss of muscular power, which precedes and accompanies the threatening of genuine apoplexy, to which, in fact, this modification of typhus has often a most forcible resemblance. In general it comes on very suddenly; and what magical change, it may be asked, has been wrought in the system in the period of a few

hours, that the subject, who the moment before his sickening, might have been largely bled without the least prejudice, should now, that he is actually indisposed, be all at once pronounced incapable of bearing the smallest abstraction of blood? To permit ourselves to be influenced by preconceived theories and puerile fears, on such emergencies, is in effect to conjure up ideal phantoms which paralyze our energies, when they are most urgently required. Abstract but the idea of contagion from cases of this nature, and we should be prepared to meet them boldly, as we would any other alarming disease of congestion, from the mere impression of the prominent symptoms. And why in our maturer deliberations should the assurance, that the morbid phenomena have proceeded from contagion, prevent us from using the remedies which for similar symptoms, arising from a different cause, we should not hesitate an instant to employ? In a rational practice, it is not surely necessary always to form our indications of cure from the consideration of the primary cause of any disorder: in general, it is only to the effects produced on the various parts of the system that our remedial agents ought to be applied; and wherever the effects are nearly or precisely similar in two acute diseases, it may be held as an axiom, that the principles of treatment ought also to be nearly or precisely similar, though the one originated in cold, and the other in contagion, or in any other opposite causes. It is the very error of the schools to avoid early depletion,

on account of supposed exhaustion; and it is truly surprising upon what slender grounds men of sagacity, and even of great experience, have rejected venesection in congestive fever. The late Dr. John Clark of Newcastle, for example, who was one of the best practical physicians of his day, speaks decidedly against it, merely from an imperfect trial of it in two or three cases; and he seems never to have had the courage to give it an impartial trial afterwards. The assertions of such weighty characters, founded upon partial observation, and defective evidence, have done incalculable mischief; and they clearly show how necessary it is for future authors to avoid those sweeping conclusions, which have been so often and so confidently drawn from a few solitary facts, usually contemplated through the medium of some favourite hypothesis.

It has already been shown, that there can be little or no certainty in the treatment of the simple and inflammatory typhus, without marking their various stages; and the same may be affirmed, with perhaps still greater force, of the worst forms of the congestive typhus, in which the first stage of oppression is often exceedingly short; and as it affords the only period in which medical assistance is likely to be available, it is to the last degree important to distinguish it from the stage of universal collapse. Acute fevers, of whatever kind, may be practically considered, in their commencement, as merely disordered states of the circulation generally and locally, which may be

most frequently corrected by the opportune application of proper means; but if in the more urgent examples those disordered states be permitted to exist for a short time, they produce both derangement of function and structure, which no human power can repair. These remarks are especially illustrative of the worst forms of congestive fever, in which the stage of oppression, as it is not followed by an intermediate one of excitement, passes directly into that of collapse,—disordered action being most commonly succeeded by organic derangement.

It is in the first stage only of the highly congestive typhus, that general blood-letting is admissible with a view of relieving the local congestions, and of restoring the natural balance of the circulation. The practitioner must not fix upon a determinate quantity of blood to be drawn, but rather be guided by the effects produced. Sometimes a few ounces will be quite sufficient, and at other times, ten, sixteen, twenty, or even more at one time may be requisite to relieve the topical engorgements, and put the general circulation into proper play. The action of the heart is often so much overpowered in the first instance, that the blood merely trickles, or rather oozes from the punctured vessel for a considerable time, being much darker and thicker than natural. Yet when a few ounces have been drawn, it usually flows with freedom, and becomes finally of a brighter colour. Occasionally, I have stood over a patient nearly half an hour before a stream of blood could

be obtained from a vein, but at last it gushed out in a full current, and was not so easily restrained as in ordinary cases. Many a life might be lost by binding up the arm too hastily, and therefore the operator should persevere, until he knows whether enough blood can be obtained. As the engorgements are in a great measure venous in the congestive typhus, my common practice for a long time was, to order the jugular or brachial veins to be opened, conceiving that blood abstracted from one of them would sooner relieve the system than from an artery. But finding in some cases that a sufficiency of blood could not be obtained from the veins, I was induced to order the opening of the temporal artery; and where the operation was skilfully done, not only enough blood was procured, but a more immediate change appeared to be effected in the whole vascular system, than by venesection simply. The circulation of the blood, it is well known, is partly carried on by the *vis à tergo*, especially that of the venous system. Now in the highly congestive typhus, the energy of the heart and arteries is greatly oppressed from the beginning; and the *vis à tergo* being thereby diminished, the blood must necessarily flow much more languidly in the veins, and of course be less easily abstracted from them than under ordinary circumstances; while it must be equally evident, that it may at first be more readily procured from the arteries, where a comparatively freer current is still maintained. Whenever therefore blood can-

not be obtained from the veins with a freedom or celerity commensurate to the urgency of the symptoms, the temporal artery should be opened. And though my experience has not yet enabled me to determine whether arteriotomy be *generally* more efficacious than venesection in congestive cases, yet whenever the head is greatly affected, which often happens, the vessel just mentioned should always be punctured, as by so doing I have frequently seen patients rescued from impending death.

In great congestions, the pulse generally rises under or immediately after blood-letting, but sometimes it continues oppressed, and even weaker than before, and then bleeding ought not to be further employed; for as the rising of the pulse under bleeding in congestive fever is a certain indication of its propriety, so its sinking is as certain an indication of its impropriety, and therefore we have a criterion to guide us in the operation. When both the pulse and the general circulation become manifestly freer, with a warm moist skin, tepid diluents should be the only beverage recommended; yet when it still remains oppressed, and the tide of the circulation does not return to the surface, and more especially if blood has been freely drawn, some wine with warm water should be occasionally exhibited, and the patient speedily immersed in a bath, strongly impregnated with salt, and at least about the temperature of 100°. of Fahrenheit's scale. He should remain in the bath till his skin become warm, and

on being removed, it should be well rubbed all over with hot flannels, and he ought then to be laid in an aired bed, with bottles of warm water at his feet. This plan, together with tepid wine and water occasionally, will often promote a flow of blood towards the skin, and considerably relieve the viscera from congestion.

Indeed if the bath can be prepared sufficiently soon, it is far best to immerse the patient in it first, and either to bleed him while he remains in it, or immediately after he leaves it. In some very severe cases, I have found it impossible to get enough blood until a warm bath had been premised, so oppressed was the general circulation before its employment. But where the bath cannot be obtained in time, warm stimulating unctions must be used instead, warm blankets applied to the surface, and warm drinks administered. The ancients, as the writings of Hippocrates and Celsus testify, paid considerably more attention than the moderns to the use of the bath and friction of the skin in febrile disorders, though a recent author of ingenuity has justly dwelt upon their importance.* It has often struck me, that

* See Reflections on Fever. By Robert Calvert, M. D. London: printed for J. Callow, 1815. Though the principal part of my essay on typhus had been written long before the publication of the above work, I did not like to pass it unnoticed; because, independently of all theory, it contains some most judicious remarks on the treatment of fevers, and especially on the utility of restoring the natural functions of the skin. The author's pathological views of fever will be found in many respects different from mine, even his principal one, which relates to the loss of balance in the circulation. He considers, that this loss of balance may

the vapour bath would be an excellent remedy in such cases, combined with the friction of some warm or stimulating liquid, to promote perspiration. It is much to be regretted, that in common practice a great deal of valuable time is often lost before the common bath can be made ready, but a steam one might be soon obtained by a very simple apparatus, which ought to be kept in every house. In all congestive diseases, the deficiency or irregularity of heat on the surface is among the primary and most important phenomena, and if the skin can be restored every where to its natural warmth, and an universal perspiration be excited, recovery will most frequently succeed. In the first stage of the most violent attacks of febrile affections, there are strong indications of internal accumulations of venous blood, which may often be removed or mitigated by restoring a due proportion of caloric to the surface. Upon this principle is to be explained, the repeated success of the method proposed by Mr. Baldwin in the plague: for immediately after persons were perceived to be affected, and consequently while there was yet no arterial excitement, they were subjected to frictions by warm oil, in a close room and over a brazier of hot coals, until free perspiration took place; and if a similar treatment were

be occasioned in two different ways, viz. on the side of depletion, when the egress exceeds the ingress; or on the side of fulness, when the ingress exceeds the egress; whereas I have simply placed the loss of balance either in a morbid fulness of the veins or arteries locally, or in a general change of capacity, relatively, between the venous and arterial systems.

adopted on the first signs of indisposition, in many of the fevers of this climate, probably it would often be highly advantageous, but particularly in those strongly marked by characters of venous congestion.

Though bleeding and the warm bath are means of the first efficacy, they should be followed by others with as little loss of time as possible. The bowels ought immediately to be evacuated by very large stimulating enemata, and then by full doses of calomel and jalap, whilst a large blister should be applied over the region of the stomach or liver. Well knowing that the bowels are commonly very torpid, and that every moment is inestimably valuable in such rapid cases, I have generally given a scruple of calomel at first, repeating much smaller doses three or four times on the first day of the attack, with the medicines above named; and when the bowels have resisted their united influence, saline purgatives have been added, that no time might be lost. The great advantages of this vigorous practice are, first, that you commonly obtain free evacuations in a short time, which could hardly be obtained at all under the ordinary mode, or at least but with considerable delay; and, secondly, that you most frequently obtain the alterative operation of the calomel within the first or second day, which is a circumstance highly to be desired. For a long time I overlooked one of the principal effects of calomel in congestive fevers; and at last it was only forced upon me, by patients almost invariably recovering

with rapidity, when ptyalism was excited.* The power which calomel has in equalizing the circulation is no where more conspicuously displayed, than in diseases of a congestive character. Before its exhibition the skin will be cold, wan, and shrunk, the pulse feeble or oppressed, and the whole system apparently relaxed: but as soon as the mouth is made sore from its influence, the skin becomes warm, reddish, and distended with the vigorous circulation, while the pulse is full, soft, and strong, and the general energy in a great measure restored. Anxious to procure the purgative, as well as the specific operation of calomel on the very first attack of the congestive typhus, I have seldom combined opium with it until an action has been established on the intestines, after which small doses of opium, antimony, and camphor, may be added with very considerable benefit. The liver is intimately concerned in the pathology of congestive fevers, and for the first day or two the alvine evacuations will commonly be found either as dark as tar, or whitish and slimy; but they speedily become natural when ptyalism takes place, and a copious secretion of bile almost invariably augurs a favourable issue. When the tenderness of the gums and the peculiar fetor of the breath mark the developement of the mercurial action, the calomel should be either entirely

* In what has been called the malignant pestilential fever at Grenada, Dr. Chisholm gave mercury many years ago; and from an able paper which he recently published, in No. 51 of the Edinburgh Medical Journal, he now appears to think, that it was of a decidedly congestive character, such as I have described.

omitted, or only given in such small quantities, as to ensure the moderate continuance of the ptyalism. For though the experience of every succeeding year tends more firmly to establish my faith in the efficacy of large doses of calomel in highly congestive diseases, yet having once fairly made the desired impression, they ought not to be repeated, such an extraordinary practice only being requisite, or even justifiable, during the urgency of extraordinary cases.

From what has been advanced, it will be evident, that bleeding, the tepid bath, frictions of the skin, calomel with purgatives and blisters, are the chief expedients in the highly congestive typhus; and even these must not be expected to succeed, unless very early and decisively employed. Indeed if a very powerful impression be not made within the first twenty-four hours, little good in general can afterwards be effected; so rapidly does the stage of collapse supervene, when the visceral congestions are not diminished soon after the attack. It is perhaps to practitioners having so frequently lost or neglected the first brief stage, that the extreme fatality of the highly congestive typhus ought to be attributed, rather than to its irremediable nature; although, as before hinted, it will sometimes baffle the best measures, however promptly and judiciously employed. For the most part venesection can only be beneficial at the very commencement of the most severe examples of this description; yet I lately attended a case in which it was twice had recourse to with great

advantage, on the fifth day of the attack. The young man had laboured under a load of his head from the first seizure, and was stupid as if half asleep, with a cool skin, and a slow, impeded, and irregular pulse, which became quicker, free, and regular after the first operation; and the second so much alleviated the symptoms, that only two or three brisk purgatives of calomel were afterwards necessary. It will sometimes happen, on account of the extreme oppression of the circulation, that only two, three, or four ounces can be procured at the first bleeding: and although this small quantity may now and then relieve the congestions, and bring about the re-action, yet it will most frequently produce little benefit; and therefore a second operation may be required, which should generally be performed at no great distance of time from the first. A moderate and early abstraction of blood is exceedingly well suited for such examples of fever, but in most cases large repeated venesections would only defeat the purpose in view, by sinking the powers of the general system so far, as to render them incapable of producing that degree of re-action requisite to restore the natural balance of the circulation. Venesection should be rarely carried to syncope, since that state not unfrequently prevents the developement of arterial re-action in cases of this nature, and thus contributes to sustain the venous congestions. When a proper portion of the vital fluid has been abstracted, so as to relieve the immediate pressure of the congestions on the vital organs,

the remainder of the cure must be accomplished by the measures already recommended. There are, however, some cases in which venesection must be used with great care, as, for instance, when aged or infirm subjects are attacked with the congestive typhus: in them brisk purgatives, the rapid saturation of the system with calomel, the warm bath, and blisters will sometimes be found the best remedies; yet when the head and the liver are at the same time seriously affected, it may be requisite to draw blood, in order to give the patient a chance for life. The following cases may perhaps suffice to illustrate these observations.

An old yet robust gentleman was seized by typhus, which assumed the inflammatory character: his wife, an extremely delicate woman, attending a great deal upon him, was in a few days infected with the fever, but in her it put on the congestive form. She was from the first completely overpowered; her face grew extremely pale, and had a dejected expression; her tongue was white, but moist; she felt her head uneasy and heavy, but her mind was not disordered; her pulse became weak and irregular; and her skin relaxed and cool. She principally complained of an extreme load and oppression about the epigastric and right hypochondriac regions, together with great loss of strength. On the bowels being freely opened with calomel and jalap, the stools appeared of the colour and consistence of tar. Finding that some relief was experienced, the purgative

and alterative plan was continued for about four days, at which time ptyalism occurred; and it was curious to remark how the excitement emerged with the mercurial action, and how the indications of visceral congestion receded. Yet still there was a tendency to relapse in this case, which required to be counteracted by the regular exhibition of purgatives. In this lady the liver seemed to be the principal seat of the congestion, and partly on this account, and her extreme delicacy, the cure was chiefly confided to aperients and mercury; though the warm bath was occasionally used, and a moderate portion of diffusible stimulus allowed, whenever she felt faint from the evacuations.

A spare and sedentary man was infected with typhus, shortly after his recovery from an inflammatory affection, for which he had been freely depleted. The fever stole upon him insidiously for two days, and then suddenly overwhelmed his strength. His head became heavy and confused, and his breathing slower and oppressed; the pulse was feeble and fluttering; and the skin cold on the extremities, though of the natural warmth about the trunk. The tongue was white and dry; the epigastric region somewhat distended; and the stomach very flatulent, and rather irritable. This patient being considerably debilitated when attacked with the fever, it was determined that blood-letting should be avoided, and that purgatives with alteratives, the warm bath, and blisters, should be tried. But although the bowels were

very freely moved, and mercurials largely exhibited, the patient continued to grow worse daily, and at last sunk into a low muttering delirium, and had a black parched tongue, with tremulous hands. There was never any appearance of ptyalism, and he died on the seventh day of the disease. On examining the body, twenty hours after death, the vessels of the brain and of the liver were found in a state of excessive congestion, though the rest of the viscera seemed to be in a natural state. In this instance, perhaps the result would have been different, if moderate venesection had been employed in the beginning; as I have since attended some of a similar nature, which terminated successfully where moderate bleeding was used in the first instance, and followed up by the warm bath, purgatives, calomel with opium, and blisters.

In the congestive typhus, especially in the worst cases, the moderate exhibition of diffusible stimulants is sometimes really necessary; not only to support the vis vitæ immediately under depletion, but also to contribute, after its employment, to rouse the heart and arteries, that the natural balance of the circulation may be finally restored. Indeed early depletion itself is to be considered as a stimulus, since it diminishes or removes those congestions which oppress the vital functions, and thereby it tends to produce an uniform and general excitement. When sufficient evacuations have been made, certain degrees of venous congestion may remain partly from want of power in the heart and arteries; and the judicious administra-

tion of stimulants may then contribute to communicate that power, and thus in the end to equalize the circulation. Yet diffusible stimuli, without depletion, are rarely beneficial, nay generally dangerous, and on this account should not be administered alone in such cases as have been described, and even when they are employed with or after depletion, their exhibition requires great care. It may be laid down as a general rule, that it is safer to give them with too sparing, than with too liberal a hand, for that recent case of fever must be desperate indeed, the cure of which is to be trusted to them singly. When the first great oppression of the most aggravated examples is overcome, they may either terminate in a complete resolution, or assume some other character. If the remedies recommended be efficient, they produce a condition widely different from the original one of congestion : in short, they establish a new condition in the system, which may at once lead to convalescence, or be followed by a simple or an inflammatory excitement of the heart and arteries. Now, if stimulants be administered too freely during or after the employment of depletion, they may excite the heart and arteries too much, and produce either a simple fever, or one complicated with inflammation ; the last of which is of the most frequent occurrence, probably because the parts which had before been preternaturally distended with venous congestion, are very readily roused into inflammation by a strong arterial re-action. In many cases of congestive

fever there is a danger of one or other of the above states supervening; but if slight ptyalism be early produced, and purgatives continued with tolerable freedom for a few days after its appearance, they will generally be prevented, or at least rendered so moderate as to be almost always remediable. When the simple or inflammatory forms of fever supervene the congestive, they must be, respectively, treated upon principles similar to those laid down for the simple and inflammatory typhus; excepting that evacuations of all kinds must be more sparingly employed, by reason of the reduced state of the system from the previous depletion.

If venesection be inadmissible in the last stage of the inflammatory typhus, it is certain destruction when the general relaxation has occurred in the congestive. At that period, the loss only of a few ounces of blood will always prove speedily fatal. There is towards the close of most acute fevers of severity, some tendency to a change in the constitution of the fluids; and this may often be witnessed so early as the second day, in the most malignant cases of the congestive typhus. The blood becomes black and dissolved, so that when drawn it never coagulates, but continues a fluid gore in the vessel. Any approaches to this state of the blood, such as inky petechiæ, or dark oozings from the mouth and nostrils, with a weak, quick, thready pulse, always prove that the stage of collapse is at hand; and should make the professional attendant pause before he advances a step forward

in the treatment. Depletion is then entirely out of the question, and the judicious use of diffusible stimuli, calomel and opium, together with blisters, and free ventilation, are the only means to which he can prudently resort at such a momentous crisis. Repeated doses of opium will sometimes save life, when the universal collapse seemed all but hopeless.

Sometimes in the last stage of the highly congestive typhus, an appearance of re-action takes place, a sort of agitated struggle in the system, from the wreck previously induced in some vital organ. The greater part of the surface becomes of a warm glow, and is covered with perspiration; the pulse rises, and frequently on a slight pressure, feels full, bounding, and strong; but it is only a false semblance of fulness and strength, such as may be often observed towards the close of apoplexy; and therefore it should not deceive the practitioner, since the smallest bleeding would soon sink it entirely. Some have ingeniously contended for the use of bleeding in the last stage of congestive fevers, on the plea, that it cannot be injurious, since there is a tendency in the case to be certainly mortal. In general the chances of recovery are then assuredly next to nothing, for if gangrene does not always exist, the visceral congestions still remain, and in combination, too, with an universal collapse. So far, therefore, from the general venesection being the only mean likely to do good under such circumstances, it is of all others the most inadmissible, since it is fitted

wholly to extinguish whatever feeble glimmerings of hope might remain. And who, on the faintest expectation of saving life, would rashly venture upon a step which, if it failed, must be inevitably and almost immediately fatal? It is at all times most painful to our feelings, and humiliating to our pride, to be consulted in the last stage of highly acute diseases, where the proper measures have been neglected in the first. On such occasions, it is too often contrary to the nature of things to expect that any human means should be available, and certainly all daring efforts ought to be avoided.

The milder forms of the congestive typhus, where the viscera are not so much engorged, and some degree of re-action takes place in the beginning, require a similar, though a less powerful, plan than that just delivered. In them, I have frequently used moderate venesection, at an early period, with great benefit, but in several cases have not found it necessary. Full doses of calomel, with moderate ones of jalap and antimonial powder, so that they may act freely on the bowels, with the assistance of the tepid bath and blisters, will sometimes effect the cure; but the calomel should be exhibited till the mouth become affected, and to ensure that and a warm perspiration it should always be combined with small doses of opium, when evacuations have been carried far enough. In tolerably strong subjects, it will generally be better to use one moderate bleeding before the purgatives, alteratives, blisters, and the bath:—

but in old or enervated habits, the lancet should either be laid aside, or employed very cautiously, for though one small bleeding may often be advantageous at the commencement, the operation can seldom be repeated with safety, and is most certainly prejudicial at an advanced period. Neither do aged nor very infirm persons bear purgatives by any means so well as the young and vigorous, and therefore in them they should not be so long or so vigorously administered.

After evacuations by bleeding or purging, an antimonial emetic often tends to produce a favourable change in the whole circulation, and has a determinate effect on the extreme vessels, a general warmth and moisture being produced upon the skin, which before its employment had been in a very morbid and variable state. It will sometimes be requisite to administer cordials, either during or after the evacuations, in order to maintain the strength, and to equalize the circulation. Yet the precautions which have been so frequently repeated concerning them must not be forgotten here; for they ought not to be considered as an essential remedy in fever, but simply as a mean to obviate some of its consequences—to give a temporary tone to the heart and arteries, or to counteract the debilitating effects of necessary evacuations. Among the preparations in our pharmacopœias, one of the best diffusible stimulants is the carbonate of ammonia, which may frequently be prescribed with advantage in congestive fevers, when depletion has been premised; its excite-

ment is neither excessive nor long continued, and, if given in moderate and repeated doses, it has considerable influence in determining to the surface.

It is more particularly within the first five days, that the attacks of the milder congestive typhus may be so subdued, as to ensure a favourable issue: but if that term be passed over, without the adoption of proper measures, little good, for the most part, can be done by any plan; though the bold exhibition of calomel, with small doses of opium, must then be the sheet anchor of our expectations. When the irregularities of the circulation proceed unmolested for some days, they are too frequently beyond the control of every medical agent, because they are then often connected with an irrecoverable collapse, or with actual lesion of structure. Still more effectually to inculcate these opinions, two cases may be briefly detailed, the one remarkable for its unfavourable, and the other for its favourable termination.

A pale and delicate young woman continued to walk about for three days after she was infected with typhus, supposing that she merely laboured under a common cold. Her friends were never in the least degree alarmed, until they observed a change in her whole manner, a dull, sleepy expression of the countenance, and some confusion of mind. It was with difficulty that she could be prevailed upon to confine herself entirely to bed, which at last, however, she was compelled to do from loss of strength, about the sixth day from

her first indisposition. She had frequent, though indistinct attacks of chilness, and the integuments on the forehead and abdomen were hotter than natural, while in almost every other part they felt below the healthy standard. Her pulse was quick, small, and compressible, the tongue foul, the stomach flatulent, and the respiration much oppressed. Brisk purgatives were at first tried, with a blister over the breast, and the warm bath. These measures affording no relief, calomel was largely exhibited with a view to saturate the system, but this also completely failed; and as she became delirious with a tendency to coma, some blood was drawn from the arm, a few leeches applied to the temples and a large blister upon the nape of the neck. Every thing was ineffectual; she gradually sunk into a state of insensibility, and expired on the eleventh day from the first feelings of indisposition. In this instance there was never any perfect developement of re-action, the extremities having continued cold throughout its duration. From dissection it appeared that the brain, liver, and spleen, were the organs chiefly engorged.

Another female, nearly of the same age and temperament as the former, was attacked by typhus, and complained of deep uneasiness in the head, giddiness, noise in the ears, and much oppression at the præcordia;—her pulse was weak and small, her breathing variable and anxious, her face very pale, and her skin rather cooler than natural, except on the breast and abdomen, where it was pungently hot. About eight ounces of blood were drawn from the arm, and six leeches applied to

the temples; the bowels were well evacuated by calomel, antimony, and jalap; the warm bath was used, and a blister put to the region of the stomach. This plan soon converted the fever into one of simple excitement, but the stools continuing loaded with morbid bile, mercurials were daily administered until ptyalism appeared, when the secretions were restored to a natural state; and the patient was completely convalescent on the seventh day of the disease.

In the milder, as in the severe examples of the congestive typhus, the bowels should almost always be kept in a soluble state, some days after ptyalism has been excited. If laxatives be neglected, even when there is an appearance of convalescence, a relapse is often the consequence, which, however, may almost always be overcome by procuring free motions. Nevertheless, whenever there are indications of any thing like a general collapse, be they ever so slight, evacuants of all sorts should be suspended; for they are frequently most pernicious in the last stage of fevers, and I believe that many cases are lost from practitioners persevering in the use of purgatives at such a period. At all times, during the treatment, and in all the modifications of the congestive typhus, the greatest attention should be paid to the temperature of the patient's apartment, and the drinks ought always to be given tepid: for if the temperature be low, or if large quantities of any cold beverage be given, a sudden sinking of the animal heat and of the vital power may succeed; and after this remark, it would not be necessary to add, that the

cold affusions are altogether inadmissible, had not I known their indiscriminate application sometimes mortal. Even when the first shock has been overcome, still it will be necessary to regulate the temperature, not only to avoid a relapse, but also to prevent any dangerous or disagreeable effects from the mercury, which in such diseases can never be given in a cold atmosphere, without the risk of gangrene in the gums, or some equally bad or even worse sequel.

It has been suggested to me, by some experienced friends, that there are certain cases of what I have called the congestive fever, to which the depletory practice is not applicable in the first instance; and these are, when the first attack is so exceedingly concentrated as completely to oppress the heart's action, and to sink the animal heat till the skin feel quite cold. A condition of this kind sometimes supervenes external injuries, as when a man has fallen from a height, or when a child has been most severely burnt: all good practical surgeons agree, that it is most proper to support the vis vitæ at first by cordials; and probably a similar plan would be best till the primary shock be over, when an extreme loss of heat has arisen from contagion or any other cause. In the Essay on the Puerperal Fever, I have pointed out a disease of that description, and towards the close of this, shall have occasion to allude to another, where the cordial treatment appears for a time to be necessary. But when there is obviously a load of venous blood about a vital organ, where the heat is not sunk too low, and where the

subject of the attack has been previously sound in constitution, the evacuant treatment is in general strongly indicated; but the practitioner must never forget, that those measures also which tend to restore the temperature to a natural state are amongst the most important and efficacious, in every modification of congestive disease. Yet the nature and treatment of all congestive affections still require further investigation, and having called the attention of the faculty to them, I trust that these imperfect hints will be followed by substantial improvements. Though neither the galvanic nor electric fluids have hitherto been applied to much purpose, yet might they not be of some utility in those acute complaints where the heart is so much oppressed, and the heat so much diminished, and where one might naturally suppose, that there was a deficiency of electric matter in the body? But on the other hand, as an excess of it would seem to exist in diseases of excitement, if this should be discovered to be a cause of supporting that excitement, would its partial abstraction from the body be beneficial in affections where the action of the heart and arteries is increased?

Before quitting the consideration of the congestive typhus, I must caution practitioners to be most minute in their inquiries, whenever consulted by patients, complaining of the first obscure indications of fever; because by a hasty or superficial view they may be led to give the most erroneous opinion, and to pursue the most injudicious practice. Some infected persons are from the beginning so listless and indifferent, that they may

make little or no complaint even when alarming congestions exist; and, if neglected on the first day, may die unexpectedly on the next, from an overwhelming oppression of some of the vital organs. Others, again, appear pale and languid, and yet will hardly allow themselves to be indisposed; but if two or three days should elapse without the adoption of any decisive measures, they also may become alarmingly worse, and fall victims to the irregular form of congestive typhus. These remarks, however, are not to be confined to this disease alone, since they are nearly applicable to all contagious fevers; and hence sudden or unexpected deaths occur from the influence of the contagion of the plague, and hence, too, great and dangerous congestions from that of the scarlet fever and measles, as I have endeavoured to show in a recent work. An irregular state of caloric on the surface being so inseparably concerned in the pathology of those congestive attacks which succeed contagion, it might naturally be supposed, that similar attacks would frequently arise from the influence of the weather and other causes; and indeed this is the fact, many congestive attacks proceeding from wet or exposure to a cold atmosphere, and others from the depressing passions, certain disorders of the stomach, and various other causes.

The foregoing principles and practices were chiefly deduced from an observation of typhus in

a country district. It may on this account be proper to inquire, whether they be applicable to the disease as it is presented in the metropolis. Unquestionably the external signs and the internal pathology of typhus are similar in London and in the country, its simple, inflammatory, and congestive varieties having all passed under my review in the Fever Institution; nor is there any class of people, so far as my information has yet extended, requiring any very remarkable modification in the treatment, except one, which shall therefore be particularly noticed. The people alluded to are of the lowest order in London, who live huddled together in extremely small, dirty, and ill ventilated apartments, who are at best badly and often irregularly fed, who are not so cleanly in their persons, or so well clothed and warmed as the poor in the country, whose moral habits are not so temperate, and whose minds are not so settled, from their employment being more interrupted and precarious, and from they themselves being much more removed from the direct intercourse and influence of their superiors. From these and other causes it results, that there is less muscular tone, and more nervous irritation among them than the poor of the country; so that when attacked with contagious typhus the depression of strength is greater, and the power of bearing depletion, particularly by the lancet, diminished in a proportionable degree; yet still this difference does not militate against the general principles of evacuation, since it requires, not that they should

be abandoned, but merely modified to a certain degree in their application.

In the simple typhus, I seldom saw the stage of excitement *commence* with a soft, fluent, compressible pulse among the poor in the country; but among the above class in London, such a pulse is not uncommon at that period, even in children, whose weak constitutions mostly correspond to that of their parents, from having been cast in the same mould of circumstances. In these examples, however, so far from stimulants being indicated, they are as pernicious as poisons in this stage, in the beginning of which a few moderate doses of calomel with rhubarb daily determined to the bowels by castor oil, or the sulphate of magnesia are generally best; and the intestines having thus been effectually unloaded for some days, during the future progress of this stage hardly any purgative will be preferable to castor oil; though from the first, the antiphlogistic regimen must be enforced, together with absolute rest, tepid ablutions, sub-acid drinks, strict cleanliness, and proper ventilation. If any threatenings of inflammation should arise during the excitement, it may generally be warded off by the prompt application of leeches and a blister, measures then, with a steady perseverance in purgatives, almost invariably well sustained and highly serviceable; but where the brain is the part endangered, shaving the hairy scalp, and using cold applications to the head are auxiliary means of considerable efficacy, and in suspicious cases

should therefore hardly ever be omitted. Under the purgative and cooling plan, however, I have known many instances terminate without any signs of genuine inflammation, and though these have been most common in young, yet some have occurred in old subjects. In the young, the general excitement runs higher, yet as their internal organs are commonly the soundest before the attack, so they are oftener free from visceral inflammation in idiopathic fevers such as typhus; and, on the other hand, in the old, from the frequently torpid state of the heart and nervous system, the general excitement is sometimes exceedingly moderate, which affords them a fair chance of escaping inflammation, when the vital organs had been previously entire. Though the poor of the metropolis bear daily purging better than any other species of evacuation, yet towards the decline of the stage of excitement, purgatives must be much more cautiously applied than in the beginning, except where large accumulations of morbid feces had taken place, from previous neglect of the bowels, and then one or two brisk doses are necessary, after which milder aperients should be employed. Indeed when patients have been brought into the Fever Institution at rather an advanced period of the stage of excitement, I have found it a point of the first importance to ascertain whether or not the bowels were loaded with scybala; for if scybala had not been retained, mild laxatives have then generally answered the best purpose, whereas if scybala had been re-

tained with much morbid secretion, calomel and rhubarb, or repeated doses of castor oil, have been necessary to dislodge them, and to free the patient from their perilous irritation. When typhus has been neglected or mal-treated in the stage of excitement, scybala collect to a large amount in the colon, and by their irritation, with that of the morbid secretions, often provoke loose evacuations. This state of the bowels may be a cause of serious or even fatal mistakes. If the loose evacuations be regarded as a genuine diarrhœa and treated accordingly, the patient will be in danger of expiring under the abdominal and general irritation thus excited and maintained by the unnatural contents of the intestines; but if, instead of prescribing such medicines as the opiate confection and the cretaceous mixture to restrain this supposed diarrhœa, the bowels be fully unloaded by suitable purgatives, such as calomel and rhubarb, or repeated doses of castor oil, the looseness will be removed, and the patient saved. In doubtful cases, where general exhaustion is considerable from the long continued excitement, and where the evacuations are loose and muddy without any portion of scybala, it is often a good expedient to inject a tolerably large enema, which will commonly show, by what is passed, whether much scybala be retained in the colon; since if some hard, dark, offensive pieces be evacuated amidst the fluid matter, it may safely be presumed, that considerably more are accumulated in the large intestines. But if possible a previous history

should be obtained respecting the quantity of food taken, and the daily state of the alvine evacuations, from which, and from the condition of the tongue and breath, a tolerably correct notion may be formed, whether laxatives or purgatives be necessary. When a considerable quantity even of liquids have been taken, when the bowels have been but scantily opened, and, when the tongue is foul and the breath offensive, most certainly the bowels will be so loaded as to require a few brisk purges; and, on the contrary, at an advanced period of the stage of excitement, when little food has been taken, when the bowels have been daily evacuated, and when the tongue is not foul, and the breath not offensive, little else than the usual secretions will be contained in the intestines, requiring the use merely of gentle aperients. It seems to have been taken for granted, that all the secretions are diminished in fever, but though this may be the case with some, it is not assuredly so with all of them; at least attentive observation will convince any one, that the intestinal secretions are increased, and this is a circumstance which should always be taken into account in the treatment of typhus, as their retention, while morbid, often keeps up more or less irritation during the stage of excitement.

In the peculiar subjects of the metropolis so particularly noticed above, the stage of collapse in the simple typhus is accompanied by a far more profound relaxation of the whole system than among the poor of the country; but though this

relaxation extends to every muscular and common fibre, it seems to be greatest in the heart, arteries, and veins, so that for want of power in the first, and want of tonicity in the two last, the circulation is carried on with difficulty; the blood almost seeming to stagnate in the capillaries, and to be especially retarded in its return by the veins, which often gives the skin a plum-coloured or purplish shade. The artery at the wrist has a most remarkable feel. In pressing the fingers moderately upon it, the pulse is extinguished, but on making the pressure slighter, it conveys an idea as if the blood were flowing along an uncommonly soft silken channel; while its feebly renewed strokes, or rather undulations, at once convince the examiner, that the heart has sustained an immense loss of natural force, whether the pulse be frequent or slow. In fine, there is a combination of peculiar softness and weakness in this pulse which cannot be forgotten by those who have once felt it carefully, and it more nearly resembles that which occurs immediately on a patient's recovery from syncope, occasioned by a large loss of blood, than any other with which I am acquainted. It has been again and again repeated on the authority of Celsus, who is in general a mere echo of the ancients, that the pulse is a most fallacious thing. Yet as I hardly know a better guide for the propriety of performing venesection, than a tense, jerky, and resisting pulse, so I do not know any single symptom more decisive against bleeding than the peculiar pulse in question; for in

the last stage I have never known the lancet used, where it was present, nay, nor local bleeding by leeches, without highly dangerous or mortal results; and therefore warn others against those sweeping assertions of the day which would have us to disregard the state of the pulse, and to bleed whenever the brain is embarrassed. This caution, too, is the more necessary, since the peculiar pulse above described, is often found, in the last stage, with delirium, tendency to stupor, injected eyes, and other signs, which, on a first impression, might be mistaken for inflammation of the brain in the simple typhus; but these, in the last stage of this form, are consequences of a remora of blood in the capillary system from sheer exhaustion, as the relaxed soft skin, the prostration of voluntary power, the enervated expression of the countenance, the hollow eyes, the supine, sunk position, the diminution of the heart's action and the feeble respiration, might all indicate in such examples. This peculiarly soft and weak pulse is quick in some cases, in others slow, and we judge of its being really dangerous or the contrary by the concomitant symptoms. When no bad concomitant symptoms exist, it is nearly always an indication of that universal relaxation which follows the excitement as its effect, which is proportionate to the degree of that excitement, and which will gradually disappear under a light nutritious diet; but when bad concomitant symptoms do exist with this pulse, the condition of which it is the sign greatly magnifies the danger,

yet even then a mild treatment may, though an active one never can save the exhausted patient. In this state, moderately good animal broths are mostly useful in small and repeated quantities throughout the day and night, so as to keep up the strength without at all oppressing the stomach; and in several instances a certain allowance of wine does good, but at first it should be given in tea-spoonfuls at a time diluted with water, and continued or withdrawn according to its favourable or unfavourable influence. It is remarkable what benefit wine occasionally produces when it lessens the frequency and increases the force of the pulse, allays thirst, quiets an agitated respiration, and induces rest in the last stage of typhus: but it is also remarkable what mischief a full dose of wine sometimes occasions at that period, the face becoming flushed after it, the breathing laborious, the pulse hurried to a countless rapidity, and the general irritation and exhaustion greatly increased; and as we cannot *à priori* anticipate its precise effect, of course it is necessary that we should be as circumspect as possible in its first administration. Those purgative medicines which are liable to produce full and frequent effects must be avoided where this peculiar pulse is found, in short whatever might tend to exhaust the heart, or to irritate the nervous system, as a slight shock to either might be mortal. One part of the practice of physic in acute diseases, especially in fevers, consists in the decisive employment of active agents in the beginning: another

part is to select and apply intermediate means in the intermediate stages, that a due relation between the treatment and the disease may still be observed; and the third part is, either to forbear altogether, or to do little, in the very last stage, in which powerful measures are generally the most destructive which can be used. When the stage of collapse is marked by such an exceeding relaxation as has been mentioned, upon the whole enemata are frequently the most proper, as they dislodge the feces in the lower intestines with the least possible exhaustion. It appears from Celsus, that both the Greeks and Romans ordered enemata in fevers much more frequently than we do at present; and the practice, it would seem, has been continued on some parts of the continent from the influence of their authority, not to mention that Sydenham often employed enemata day after day in fevers, much in the manner of the ancients. On many occasions, we should not hesitate to return to this as an ordinary practice, because experience proves it to be more expedient than purgatives by the stomach, where great debility exists in the last stage. Indeed it is often a very round-about way of procuring an evacuation to pass a purgative along the whole tract of the intestines when the matter to be dislodged is only in the lower portion, and when it can be more safely and promptly accomplished by an injection. Except when some very irritating substance is added, glysters operate principally by the stimulus of distension; and tepid water therefore will

commonly suit as well as any thing else, the quantity being varied as circumstances may require. A small quantity of fluid thrown into the rectum will often fail to operate, whereas a large quantity will rarely fail to procure a full motion. Where the bowels were so much loaded as to need something more than enemata, and where the collapse was formidable in such habits as have been described, I have most frequently prescribed castor oil, with appropriate support, sometimes in the dose of half an ounce repeated as occasion might require, and sometimes have found a drachm or two sufficient, when properly aided by enemata. In instances of this kind, I have often observed, that the stools were almost as dark as tar at first, but as the remains of fever subsided, they became natural, a clear indication that their previously morbid state had depended upon the constitutional affection called fever, as castor oil cannot change secretions by its topical effects; and I am fully convinced, that even in many chronic diseases the unnatural condition of the abdominal secretions is not unfrequently owing to an insidious degree of constitutional fever, or to speak definitely, to some increase in the action of the heart and in the animal heat, which must be removed before the secretions can become natural, but which is often disregarded or misunderstood in the search for some topical disease.

Perhaps in the progress of medical science something may be found to lessen the fatality of certain modifications of fever in the most ad-

vanced stage. At that period, as just hinted, the chief cause of death sometimes appears to consist in a collapse of the heart, and a loss of tone in the vascular system, by which the capillaries at last are left injected, and the larger veins loaded with very dark blood; so that, in reality, whatever some men have pretended, none of the genuine signs of inflammation are discoverable after death, such as an effusion of coagulable lymph, adhesion of parts, suppuration, or gangrene. In this ultimate state of relaxation, for such, in the present state of our knowledge, it must be accounted, would the application of the galvanic fluid, or the inhalation of oxygenated air be useful, the one by communicating energy to the nervous system, and the other by renovating the vitiated blood? This question is merely put to call the professional attention to some points which have not yet been sufficiently considered. The notable relaxation alluded to is sometimes gradually removed by the cautious administration of wine, æther, and similar stimulants; but as they are liable to fail, hence perhaps the galvanic fluid and oxygen are deserving of some notice as means of excitation. In the application of every stimulant in the last stage of fever, it ought always to be borne in mind, that powerful or too often repeated doses may soon sink the strength; and therefore if such measures as the galvanic fluid or oxygen should ever be ascertained expedient, they would require a still more circumspect employment than wine and the like excitants. It shall

afterwards be shown, in contrasting true typhus with the common continued fever, that a peculiar duskiness of the skin is one of its distinguishing signs, varying in its shade as the disease may be recent or protracted, mild or severe; and as this preternatural darkness of the blood would almost seem to indicate an over-plus of carbon in it, possibly this state may be capable of correction through the influence of some chemical agent.* Whatever means tend to lessen this duskiness in typhus are commonly serviceable, and among these the nitric, muriatic, sulphuric, and citric acids deserve to be enumerated. The utility of certain mineral acids has been vaunted lately as a new discovery; but Sydenham employed them, and has left his unequivocal testimony in favour of the sulphuric. Of the mineral acids, the muriatic is that which I have most frequently prescribed, one or two drachms largely diluted with water in twenty-four hours, so as to make it a sort of common drink, and certainly its effects have sometimes been very beneficial, where it kept the bowels open, without exciting griping pains or diarrhœa. But fresh lemon juice is perhaps equally useful, at all events it is highly refreshing to the sick, and may be more extensively administered, since it does not, for example, disorder the bowels under the operation of calomel, a purgative often exceedingly

* As the respiration is much affected in typhus, can there be less carbonic acid thrown off than is requisite to keep the blood pure, or can the disturbed respiration be in any other way concerned in this apparent change which the blood undergoes?

serviceable in this state of the skin. All these acids in general much diminish the irritation of thirst, and also often act on the kidneys or skin, besides keeping the bowels soluble; but can they in any manner be efficacious by communicating oxygen to the blood, as it is darker than natural in typhus?

The cases of the inflammatory typhus received into the Fever Institution this year have been much more numerous than any others, and when they occurred in the fore-mentioned class of the poor, the inflammation generally assumed the sub-acute form, and was mostly attended by a rather soft, compressible pulse. In these, the blood drawn from a large vein did not most frequently show the buffy coat even early in the stage of excitement, though the crassamentum was then commonly firm, but in some instances, where the lancet was somewhat later used, it was comparatively loose. General blood-letting, in such subjects and cases, was only beneficial when moderately used early in the attack, and when the fever had continued a few days, in them the general result of my experience is most in favour of local bleeding; for in referring to my notes, I have been much struck with the great relief which leeches have afforded, when timely applied to the head, chest, or abdomen, accordingly as the inflammation happened to be seated in one or other of these parts. But as the frequency or the force of the heart's action was invariably much diminished in those examples where leeching was so serviceable, it is

mainly to the power of a small or moderate loss of blood, thus drawn, over the heart's action, that I would ascribe their efficacy rather than to the received notion of revulsion. However the fact may be explained, it shows how useful the application of leeches may be, when the object is to reduce inflammation and to save the strength in an enfeebled frame which has laboured under genuine typhus for some days; but the benefit of leeching has been no where more apparent than in sub-acute inflammation of the brain, the pain having been in general greatly lessened, and sometimes wholly removed, while the pulse fell considerably, and a most remarkable change for the better took place in the expression of the countenance. On inquiring into the previous history of the patients now specifically considered, I have found that many of them had lived upon the most meagre diet for some time before the attack, while not a few had indulged in the use of ardent spirits whenever attainable: so that these and the like circumstances had not only lessened the constitutional tone, but also created a species of nervous temperament which required a more cautious depletion than in patients ordinarily met with in private practice; for whenever too much blood is abstracted in morbidly susceptible habits of this kind, the nervous system at once grows highly irritable, and indeed, to use the forcible expression of an enlightened friend, often becomes as ungovernable as a wild horse without a bridle. Besides, there is something so peculiarly depress-

ing in the influence of contagion itself over persons who have been previously destitute of most of the common comforts and some of the necessaries of life, that nothing but the presence of some threatening mischief would justify in them the use either of general or local bleeding, the first of which for the most part is only admissible at an early stage of the inflammatory typhus; but as the stage of excitement is often so prolonged when the inflammation is sub-acute, it is most difficult to mark the limit at which we should stop in the use of local blood-letting, except where the stage of collapse is actually present or rapidly approaching, and then we should forbear, as the application even of a few leeches might be fatal. Since whenever there is just cause for doubt about the propriety of general blood-letting we ought to prefer local, so wherever there is a similar doubt about the propriety of local blood-letting, we should prefer purgatives; and these, judiciously and perseveringly administered, will often succeed when every other means would have failed, in those complicated cases of typhus where subdued degrees of inflammation exist conjointly with a considerable loss of strength, as in the patients now under notice. Yet it ought not to be forgotten, that in such blisters are agents of much efficacy. The irritation which they excite upon the surface of the chest, abdomen or spinal column often considerably diminishes the internal affection; and where any disposition was evinced towards stupor, they have appeared especially

serviceable when applied over the head, in cases admitted late into the hospital.

Besides the peculiar order of the poor, so often referred to above, many persons have been brought, labouring under typhus, into the Fever Institution, who were previously well fed, clothed, and lodged, and accustomed to sufficient exercise in the open air. In such patients, particularly when young or middle aged, the general result of decisive venesection at an early period of the inflammatory typhus has been highly satisfactory not only to myself, but also to my able and excellent colleague Dr. Cleverly, though the effect of local bleeding has been often, and of purging always, a subsidiary of considerable force. It was before-mentioned, that the pulse was mostly soft and compressible, even in the beginning of the inflammatory typhus when it occurred in certain habits relaxed from want of proper nutriment, air, and other circumstances; but in the robuster patients now under consideration, the pulse was frequently full and resisting, or at least generally indicative of more or less increased energy in the stroke of the heart. This difference in the pulse merits some attention. A soft, small, fluent pulse commonly indicates in typhus, that local will be preferable to general bleeding, particularly if the fever be of some days duration; a hard, full, jerky pulse commonly indicates, that general will be preferable to local bleeding, particularly in the commencement. But in determining which is to be used the constitutional powers should always be carefully considered.

When in typhus the preternatural force in the heart has once been removed, which is shown by the pulse becoming weak as well as soft, then local will be more suitable than general bleeding, even in patients who had been constitutionally vigorous, if any signs of visceral inflammation should still remain. These observations respecting the pulse must not be extended to every other febrile affection, because I hold them to be more peculiarly applicable to typhus as a specific disease, which demands much more care as to the extent of blood-letting than those fevers which proceed from ordinary causes. To give more weight to this remark it may be noticed, that several cases of fever proceeding from the influence of the weather and similar sources have been sent as instances of typhus into the Fever Institution, where the lancet was beneficially used at rather an advanced period, when it would have been fatal in genuine typhus; and I am persuaded, that those who so strongly recommend such repeated and even late venesections in typhus have mistaken for it the common continued fever of this country, a disease which shall afterwards be shown not to possess a contagious property. An hospital where, from the mode of ventilation, the temperature has hitherto varied with that of the external atmosphere, is not a place suitable for the common exhibition of calomel as an alterative in fever: and as it, therefore, has been most frequently given as a purgative during the excitement, what relates to its alterative powers in the inflam-

matory typhus of the metropolis shall be considered in another place. It may be subjoined, that purging is an evacuation which has been remarkably well borne and highly advantageous in every modification of the inflammatory typhus which has been admitted into the Fever Institution. In the cases of the congestive typhus which have come under my care, where it was absolutely necessary to create reaction in order to save the patient, the influence of calomel as an alterative was unquestionably favourable, in conjunction with external warmth, tepid drinks and laxatives, and sometimes with blisters and local bleeding; for in those cases the use of the lancet was generally inadmissible, sometimes from the great constitutional feebleness of the patients in whom they occurred, but far more frequently from the too advanced stage at which they were sent into the wards. Indeed several patients have been received in a dying state, who, from the preceding history which was collected, had exhibited no signs of excitement, but who had sunk into the congestive typhus, under the first shock of the contagion; and it was curious to remark what a very different aspect the disease had, even in this advanced stage, from the simple, or the inflammatory variety. The face and general surface was commonly pale, mixed however with a certain shade of duskiness in several places, most evident at a short distance from the bed, while dark petechiæ were often scattered here and there on the skin. Before coma existed, the expression in some cases was

idiotic, and in others marked by a wild or vacant stare; the tongue was mostly white, soft, and moist with a ropy saliva, the tunica adnata blanched to whiteness, and each pupil of the eye more or less dilated. Often in such cases, a faint smile or grin was now and then observable, with a quivering motion of the upper lip, mostly attended by starting of the tendons at the wrist; while indifference to surrounding objects, or an alternate stupor and delirium designated the mischief in the brain, which at last generally terminated in coma. The pulse was invariably feeble, the respiration irregular, and the animal heat below the natural standard in examples of such extreme severity; but in others, where the venous congestion had been less overpowering in the beginning, some degree of reaction occurred toward the close, with a dry dark tongue, black petechiæ, and those symptoms which the older writers deem putrid. Upon the whole, indeed, typhus has assumed a remarkably urgent character in the metropolis during the last year, particularly where it was allowed to hold an unimpeded course in the wretched haunts of poverty; and in the majority of cases, however favourably the patients might have been situated, an early tendency to petechiæ has been among the most prominent of the external signs. Most recent writers on fever seem disposed to attribute the appearance of petechiæ to the hot regimen, and thus account for their frequency in the typhus of former times when that practice was prevalent: but though they may have been often

thus produced formerly, yet this was not the cause in a great many of the epidemic cases which have occurred in the metropolis, for the petechiæ in some instances appeared on the first day of the attack, and frequently on the second and the third; and it is therefore highly probable, that petechiæ sometimes occur as epidemical peculiarities wholly unconnected with the mode of treatment which may be pursued, nay, this is certain in the instance above adduced. The petechiæ were sometimes so peculiarly small as to have the character of an almost anomalous rash, and sometimes so large and thick-set as to make the skin almost as red as in the measles or scarlet fever, for the eruptions of which indeed I have known them occasionally mistaken; but whatever were their characters in the first or intermediate stages of the simple or inflammatory typhus, they have been invariably lessened by purgatives, especially where calomel was given for some days successively. Numerous cases have been brought into the Fever Institution with as malignant a combination of symptoms as any that Huxham and other authors have recorded in their works, which proves that the disease is liable to have the same characters now as formerly; and yet a large proportion of the cases just alluded to was certainly composed of the inflammatory typhus, the circumstantial evidence of symptoms, and the more direct evidence of dissections having alike shown, that the inflammation was not confined to one viscus, but had attacked those of the head, chest, and belly.

It is however deserving of particular notice, how comparatively mild an aspect the disease soon assumed under the cooling and evacuant treatment, in many of the patients early removed into the Institution; and even those instances which did not undergo so speedy an amelioration have nevertheless been conducted to a successful termination, with very few exceptions indeed; so that the number of deaths has been made up, in a great measure, from cases sent into the wards all but hopeless or actually moribund. It has often been the subject of deep regret to my colleague and myself, that we should have been so repeatedly circumstanced as only to have it in our power to attempt the mitigation of the final sufferings of patients in the last stage of a disease, which generally would have admitted of a remedy if they had been seen in the first or intermediate stage; and it may here be remarked, that one great difference between the simple, the inflammatory, and the congestive typhus, is this, that the first is often remediable in the last stage when it had been unrestrained in its progress, but the two last are rarely so, because if neglected in the beginning, they are so exceedingly apt to induce organic derangements. This observation illustrates why typhus under one epidemic constitution may sometimes be seldom fatal, and why it may be often so under another; for the simple variety of the disease, under its mildest modifications, will frequently end well without any medical aid, and under its more strongly expressed character, will

generally yield to purging and the cooling treatment; whereas the inflammatory typhus, and a similar remark likewise obtains with the congestive, must be met by more active measures in the first or intermediate stages, otherwise the mortality will necessarily be considerable. From all indeed that I have seen of typhus in the metropolis, I am fully warranted in concluding, that evacuations and the antiphlogistic regimen, properly varied according to the character of the cases and the constitution of the patients, are highly efficacious in the general result, when timely applied, even in the aggravated forms of the disease; but that, in such examples, the efficacy of medicine lessens in a ratio with the advancement of the complaint towards the last stage, in which most agents are of doubtful, if not of dangerous application, except those gentle ones termed laxatives. The following extract from the Annual Report, which was drawn up by Dr. Cleverly, will show under what unfavourable circumstances we have had to combat an epidemic, the common character of which has been extremely severe, during the whole term in which we have practised in the Fever Institution.

"The present epidemic commenced in London about the end of March, 1817, and during twelve or fourteen months the proportion of deaths, in comparison with former years, was certainly very small. In May last, however, the mortality began to be more considerable, and the physician, at that time officiating, reported, that the disease 'seemed

to have assumed a character of greater severity, and that the mortality had, in consequence, been very considerable.' And in the report for June, the same physician declared, that the mortality had been unprecedented in any former reports of this Institution; and this he ascribed, in part, to the increased virulence of the malady, but principally 'to the very advanced state of the disease in which many of the patients were admitted, precluding the possibility of affording them effectual relief.' And, in fact, the mortality in June was 1 in $4\frac{1}{4}$, which is greater than at any period (with a single exception) since the Institution has existed. In July (about the middle of which the present physicians were appointed) the ratio was as 1 to about $5\frac{1}{10}$, and the average ratio for the whole period comprehended in the present report is nearly as 1 to 6. Epidemics have always been observed to differ much from each other in the severity of their characters, and even from themselves, in different periods of their course; so that, in all Institutions the mortality, in different years, has been found to vary greatly; and, indeed, in the London House of Recovery, it has fluctuated between 1 in $12\frac{1}{2}$, and 1 in $3\frac{3}{4}$. But however various this result, we know that the disease was treated by the same physician, in the several instances alluded to, and with the great care and talent by which he is distinguished.*

* Dr. Bateman, the author of the valuable little Treatise on Epidemic Fever, recently published.

" Besides, the mortality in the wards of this Institution cannot be considered as representing, at any time, the general destructiveness of the disease, or the success with which it may be treated in its early stages; for the House has become the receptacle for a very considerable number of the worst cases of typhus in its most advanced stages; and to this cause, certainly, the great mortality is to be attributed. It will appear on examination, that a very large proportion of the patients has been sent into the House from under the care of general practitioners, and from the medical officers attached to parishes; and this often not till the disease had assumed its most alarming and desperate character. Patients themselves often evince considerable reluctance to leave their homes, however miserable, and seek relief in an hospital; and, when the first dread of the epidemic is over, they are frequently retained by their relations, till the aspect of the disease has alarmed these for their own safety.

" From these causes it has arisen, that patients have often died before the porters could arrive at their dwellings; that others have expired in the house before the physicians could see them; and that others, again, with cold extremities, livid, and senseless, have survived their reception only a few hours; and, had it been possible that many of the patients could have left their fever at the gates, they must still have died, from the great mischief which important or vital

organs had sustained during the first period of its destructive and, perhaps, unrestrained violence."*

From the above statement it will appear utterly impossible to form any precise estimate of what might have been the average of mortality, had opportunities been generally afforded of treating the disease in the primary stages; but if the number of moribund cases alone were abstracted, the average would not be very considerable, in proportion to the violence of the epidemic; and if those cases were also abstracted in which the patients were admitted, though not actually moribund, yet all but hopeless, the average of mortality would be low indeed. Upon the whole, I may repeat, that my experience in the Fever Institution has tended to increase my confidence in the efficacy of physic when applied in the beginning of fevers; and it has likewise satisfied me, that it is generally of much utility in the intermediate stages, but that it is of comparatively little benefit in the last. There are some men such enthusiasts as to suppose, that medicine can do every thing, and others so sceptical as to assert that it can do little or nothing; but the truth lies in the middle of these extremes, for while the imperfections of the medical art are certainly to be lamented, yet it cannot be justly denied that we are in possession of many valuable principles

* The Seventeenth Report of the Institution for the Cure and Prevention of Contagious Fever in the Metropolis: For 1819. London: printed for the Institution.

and practices, especially in regard to acute diseases. If any good man, acquainted with the structure and functions of the healthy body, were to be placed in an hospital in which nothing but the worst cases of acute disease were admitted in the last stage, the result would probably be to shake his confidence most completely in physic: but if, on the contrary, he were introduced into an hospital where nothing but acute diseases were admitted in their very onset, and skilfully managed at that time, his confidence in the healing art would be confirmed, in short he would feel assured, that his profession was at once useful and dignified; so that if he were called to practice where cases were indiscriminately admitted, he would be in no danger of imputing imperfection to physic where an unrestrained *disorder* had been permitted to produce an organic *derangement*. In regard to public and private practice, supposing other circumstances the same, still I am inclined to think, that the success in the main would be greater in the latter: for I have never yet seen an hospital constructed with due reference to the phenomena of the human mind, far too many patients being put into one ward, not even arranged according to the character of their cases; and thus it frequently happens, that the sufferings of some greatly agitate the mind of others, and thereby the symptoms, particularly in fever, are apt to be aggravated.

Few diseases being more liable than typhus to leave predispositions, as it subsides, to secondary

attacks of fever, it may be of some service to the inexperienced to bring them, as it were, to the bedside, and briefly point out the causes, the peculiarities, and the methods of treating such attacks. Secondary fever may proceed from six causes, namely, re-infection, neglected bowels, errors in diet, diffusible stimulants, too early or too much exertion, and the influence of a low or variable temperature in the convalescents' apartments. Where a number of people have been confined in an atmosphere not sufficiently refreshed by ventilation, typhus itself is apt to return from the influence of the accumulated matter of contagion; the general debility, which for several days usually attends convalescence from a first attack, strongly predisposing the body to a second, where the convalescent breathes a contaminated air. On this account, every Fever Institution should have convalescent wards, into which patients ought to be removed as soon as they have recovered from typhus; for if they remain in wards containing other patients actually labouring under the disease, they may contract it again, whatever care be taken as to ventilation, from going about the beds of those patients, with whom they are apt to converse. When the strength has once been fully restored, then the body, so far as I have remarked, resists contagion better than before; though those who have recovered from a first attack should always avoid if possible the chance of a second, by a removal into a pure atmosphere. If a second attack of typhus occur in a highly exhausted sub-

ject, soon after the first has been subdued, the face often becomes sunk and pale, the skin cool, the head giddy, the pulse feeble and fluttering, the respiration quick, short, and weak, and the patient may thus sink with rapidity, before the developement of the stage of excitement. External warmth, strong warm tea, a little æther with six, eight, or ten drops of laudanum, I have found among the best measures under such embarrassing circumstances of the first stage; and even where the stage of excitement is subsequently developed, still the danger is very considerable, especially if any degree of wheezing be present, for such peculiarly enervated patients can only bear the mildest treatment. Tepid ablutions, therefore, laxatives, sub-acid drinks, consoling language, and a fresh cool atmosphere are the means usually most suitable for counteracting an excitement of this kind; though when the bowels shall have been sufficiently opened, very small doses of Dover's powder, say from one to three grains about twice in twenty-four hours, sometimes allay irritation and open the skin. Thin arrow root with lemon juice is the best diet in such cases, but the appetite is usually so prostrate, that very little can or ought to be given at once, and indeed it should never be forced against the inclination of the sick. When typhus supervenes a second time, where the interval has been sufficient for the strength to be in some degree recruited, it may most frequently be controlled by active purgatives and the cooling regimen: if

however any threatenings of inflammation appear, leeches and blisters should be promptly applied, which will commonly supersede the use of the lancet; and when inflammation is really present it must be managed as formerly recommended in the inflammatory typhus, according to its extent seat, and character, together with the constitutional powers of the patient.

If the bowels be neglected for a few days during convalescence from typhus, they are liable to be over-loaded, and the tongue in that case becomes white and furred, the breath somewhat offensive, a fever suddenly or insidiously resulting from the intestinal irritation. The remedies are free purgation, the tepid bath, and an abstemious diet, but if any signs of abdominal inflammation appear when the bowels have been well evacuated, a full opiate will often allay the pain, and render venesection unnecessary: indeed when the bowels have been thoroughly opened, if any constitutional irritation, or rather if a quick pulse and hottish skin should remain without any marks of inflammation, small occasional opiates will generally prove highly beneficial, though laxatives should be daily prescribed so long as the fever shall continue. In most secondary fevers, the nervous system is peculiarly suceptible, from the body not having attained its full tone of vigour before the attack: this state of the nervous system frequently makes those medicines called anodyne highly expedient, either during or after the employment of purgatives or laxatives; and certainly

opium or hyosciamus is sometimes remarkably advantageous, particularly when an unusual irritation has been excited on the mucous membrane of the bowels.

During convalescence from typhus, the diet ought to be most carefully regulated. At first it should consist of very light broths, gruel, or arrow-root, and the convalescent should not be allowed any solid animal food till he is able to walk about; and even then it should be given in very small quantities at first, and gradually increased, for a full meal of it might at once excite the system into fever. Many cases of secondary fever have fallen in my way which arose from vain attempts to raise the prostrate powers suddenly into strength by too nutritious food, and several also which originated from indulgences in small portions of indigestible articles, such as sausage, cheese, pastry, or raw vegetables. Even ripe fruits should not be indiscriminately or abundantly allowed during convalescence, as some of them are apt to induce fever, especially if the rinds or seeds be swallowed, or the fibrous parts of certain fruits, which may keep up an irritation for many days, by passing undigested into the bowels. The pulp of roasted apples is one of the most suitable things, the pulp of fresh grapes, or the juice of a ripe orange. In convalescence, the appetite is often keen and capricious at the same time, but the medical attendant should restrain both these conditions within due bounds, and give precise directions respecting the quantity and

the quality of the food; while he ought likewise to preserve a proper balance between the ingesta and the egesta, by the occasional exhibition of laxatives, which are nearly always required at some periods of convalesence. When fever has been produced by too full a diet, the vascular system is generally in a state of plethora, so that general or local bleeding is mostly requisite in the first instance; but as the functions of the stomach, liver, and intestines are synchronously disordered, purgatives should be persevered in until the fever abate, and the secretions become natural. At first, the stools will commonly be composed of dark, thick, liquid matter, mixed with hard lumps of feces, and they ought to be daily inspected until all scybala be dislodged. In the beginning of such attacks calomel and rhubarb are commonly the best purgatives, followed up by the castor oil; but after two or three doses of the former, an action on the bowels may be maintained by the latter alone, which operates with little irritation, and which, by not changing the colour of the evacuations, shows us when the secretions are really natural. Where any irritating matter has been taken into the stomach, it is best to expel it by a gentle emetic, and to allay the turbulence afterwards by a small opiate; but if this matter should have passed from the stomach into the intestines, one or two purges will be requisite, with an anodyne afterwards. The use of diffusible stimulants, however sanctioned by common routine, are most decidedly prejudicial during convalscence

in a large majority of examples, producing with rapidity all the bad effects of errors in diet; and that practitioner indeed will have most reason to be satisfied who not only in general rejects wine but likewise tonic medicines, and who, instead of employing such means, places his patients in a fresh atmosphere, and occasionally exhibits laxatives.

Genuine typhus nearly always leaves considerably more relaxation of the whole habit than those fevers which arise, not from a specific contagion, but from some ordinary cause; and it is partly on this account that if convalescents sit up too long at a time, or if they take too early or too long exercise, whether of body or mind, they may readily lapse into secondary fever. It is best, therefore, to permit them only to sit up for a short time at once, and to prohibit them from using any inordinate exertion until the strength be completely re-established; and for some time after they begin to sit up, even their dress should be strictly attended to, and varied according to the season of the year, that they may neither be irritated by too warm, nor chilled by too light clothing. It is also important, that the temperature of the convalescent's apartment should be properly regulated while he shall remain weak; for if it be allowed to fluctuate with that of the external atmosphere, or if air be admitted in partial currents, an attack of chilliness may succeed, and either at once threaten life, or be followed by febrile excitement. When the animal heat is largely and suddenly abstracted from the surface

of an enfeebled and emaciated convalescent, the whole skin becomes deadly pale, the respiration exceedingly oppressed, and the pulse a merely small, undulating, fluttering line; so sunk is the heart's action for want of the stimulus of a due degree of heat in the body, and from the blood, in retiring from the superficial into the deeper seated veins, having accumulated too superabundantly about the right ventricle and adjacent vessels. Some cases of this kind prove fatal in a few hours, where the means of restoring the animal heat to its ordinary standard and universal diffusion, have been neglected or misunderstood; but if, as soon as the chill comes on, external warmth be perseveringly applied, if warm water, with wine or even a little brandy, and six or eight drops of laudanum, be internally administered, all risk from chilliness will commonly be soon averted. In short the natural temperature will be restored, and the tide of the circulation again returning to the surface, the heart will at once be freed from over-distension, and roused into an energy sufficient to move the blood in its accustomed round. The animal heat is one of the principal media of connexion between the nervous and vascular systems, and where it is excessive, the heart's action will be usually increased, and where it is deficient, that action will be usually diminished or oppressed. Such seizures as the above are unquestionably of the congestive order, but the exhausted subjects in whom they occur, and the extreme reduction of the animal

heat render cordials necessary, as means of exciting internal warmth. It has been figuratively but forcibly said, that general rules in physic may murder their exceptions; and certainly the circumstances coupled with this peculiar congestion demand a treament different, in some important particulars, from that adapted to congestions occurring in the fulness of health and strength, with a notable alteration in the animal heat. Indeed I readily confess, that my knowledge of congestive diseases is altogether extremely imperfect; but having been instrumental in directing the professional attention to their pathology, I cannot but hope that the deficiencies will be supplied, and many new lights concentrated on the subject. When the chilliness is overcome in the alarming attacks alluded to above, a copious perspiration frequently succeeds, and thus convalescence may be again shortly re-established; but if no perspiration should succeed, and if a simple or an inflammatory fever should supervene, it must be treated accordingly, due allowance being made for the debilitated state of the patient. In some convalescents from typhus, who possess more constitutional vigour, the chill from exposure to cold is comparatively slight, in others scarcely regarded by themselves, though in both it generally soon terminates, by the efforts of nature, in the stage of excitement; and then, as in the former case, the fever will be either simple or inflammatory, but more manageable, on account of the greater vigour of the patients, who bear evacuations better.

There is yet one point respecting secondary fever which I could wish were most particularly remembered, as it may enable others to save patients under circumstances, in which I have had the misfortune to lose some. Several instances of secondary fever have occurred to me, which were designated merely by an increase of heat, a quickened pulse, and a slightly furred tongue, without pain or uneasiness in any part; in short at their commencement they were divested of every thing like genuine inflammation, and I therefore trusted to evacuations by the bowels, and the antiphlogistic regimen. In some cases, this plan entirely removed the fever, but in others it failed, and as the excitement continued, I observed, that in one, two, or three days, signs of positive inflammation began to appear in some important part; the inflammation being generally seated in that quarter which had seemingly suffered most during the progress of the primary attack of fever. Inflammations of this kind sometimes baffled all my exertions, for they came on so insidiously, from the general excitement acting on local and latent weaknesses, that now and then they at length suddenly overwhelmed the functions of a vital viscus, and as I had not anticipated, could not then parry the deadly attack. Occurrences of this kind, therefore, have put me actively on the watch, so that when a simple fever takes place secondarily, I now most frequently employ leeches in conjunction with purgatives, as soon as ever the skin grows hot and

the pulse at all sharp or quick; and since I have pursued this method, internal inflammation has rarely arisen afterwards, provided a spare diet was strictly adopted at the same time, with absolute rest, and the tepid ablutions. Here the remarkable effect of the leeches has been to diminish the heart's action without reducing the general strength; and, even if accused of tedious repetition, I must again assert, that these little agents are powerful auxiliaries in the treatment of fever.

It would be a sad delusion always to think, that the chances of danger are completely past with the original disease, for that would lead to a neglect of those precautions by which secondary and serious attacks may most frequently be prevented; and I would earnestly advise every medical man, when he has subdued one affection, invariably to give those minute directions to his convalescent patients which will be most likely to prevent the accession of another. Few things are more useful than marking those circumstances which reproduce disease, when a confidence in returning health throws both the ordinary convalescent and the ordinary attendant off their guard; for, by collecting information of this kind, a species of anticipation is at last produced in the practitioner which very often enables him, like a prophetic influence, to avert an evil, which would otherwise fall upon patients from the neglect of necessary restrictions. It is remarkable, however, that relapses are more common in some epidemics than in others, and even sometimes more common at

one period of the same epidemic than another, either from greater predispositions left by the more intense impressions of the disease, or from some concomitant and peculiar state of the surrounding atmosphere. When called early to primary seizures of fever, in most of their modifications we have fixed principles to guide us, provided the patients have been tolerably healthy before the attack; but when called to secondary seizures, in which the body has been wasted from the preceding illness, our principles become less certain in their character and application, inasmuch as if we stop too short or go too far, we are often alike in danger of a speedy failure. In a word, we can depend less upon the resources of nature and of art. As a general rule, however, in secondary attacks of fever, it is better not to err on the side of excess with respect to evacuations; and when sufficient evacuations have been made, anodynes are peculiarly suitable to tranquillize that agitated state which we term irritation. Having now considered the most important circumstances with which my experience has furnished me respecting typhus, some other affections shall be adduced, in order further to illustrate the pathological and practical bearings of the doctrine of a simple, an inflammatory, and a congestive form of fever.

THE PLAGUE.

THE PLAGUE.

IT is the common opinion, that there is a close analogy between typhus and the plague; and as the first has been accounted, by most modern writers, an asthenic disorder, so the last has been deemed of a similar but more severe character. The prevalence of this opinion has brought depletion into disrepute among European physicians, and has introduced an undecided and merely palliative treatment in the plague. An attentive comparison of the most authentic histories of this complaint, with the phenomena of typhus, has certainly convinced me, that a close analogy actually does exist between the two maladies; and having endeavoured to demonstrate, from personal experience, the fallacy of the scholastic notions as to the nature of typhus, I shall now, from the observations of the best authorities, attempt to show, that the plague is not a disease of real debility, but one of excitement and of congestion.

Different authors have arranged the appearances of the plague in different ways, according to the peculiarity of their pathological views, or to the extent of their information. Most of the French writers on the subject have specified five varieties, Dr. Russel has extended them to six, and Chenot,

even to seven; but, as some of those varieties are distinguished by unimportant and even common symptoms, the more generally adopted arrangement shall be preferred here, which only admits of three species of the plague. Upon the whole, one of the best and briefest descriptions of this disease is contained in an excellent paper, published by Dr. now Sir Brooke, Faulkner, in the Edinburgh Medical and Surgical Journal; and as it has been drawn from an extensive observation, during the late appearances of that complaint in the island of Malta, it shall be selected as a sort of text to the few comments about to be offered.

I. "That in which, at the first attack, the energy of the brain and nervous system is greatly impaired, indicated by coma, slow, drawling, or interrupted utterance. In this description of the disease, the tongue is white, but little loaded with sordes, and usually clean, more or less towards the centre and extremity; the anxiety is great; cast of countenance pale; stomach extremely irritable, and the strength much impaired. Rigors and pain in the lower part of the back are among the early precursors of the other symptoms. This was observed to be the most fatal species of the plague, and prevailed chiefly at the commencement of the late disasters. Those who were thus affected sometimes died in the course of a few hours, and with petechiæ."

II. "The next species I would describe is, that in which the state of the brain is the very reverse of what takes place in the former, the symptoms

generally denoting a high degree of excitement: the pain of the head is intense; thirst frequently considerable, though sometimes wanting; countenance flushed, and utterance hurried. The attack is ushered in by the same rigors and pain of back as in the foregoing. Epistaxis not unfrequently occurs in this class of the disorder. The glandular swellings come out very tardily, and, after appearing, recede again without any remission of the general symptoms. Carbuncles arise over different parts of the body or extremities, which are rapidly disposed to gangrenous inflammation. The delirium continues extremely high and uninterrupted, and the patient perishes in the course of two or three days. Sometimes he lingers so far as the seventh, yet rarely beyond this period, without some signs of amendment. Of this second description, the examples have been very numerous, and were nearly as fatal as the preceding. In the countenances of some, just previous to the accession of the more violent symptoms, there is an appearance of despair and horror which baffles all description, and can never well be mistaken by those who have seen it once."

III. "The third species which I would enumerate, is nearly akin to the last, only the symptoms are much milder, and the brain comparatively little affected. The buboes and other tumours go on more readily and kindly to suppuration, and by a prompt and early employment of remedies, to assist the salutary operation of nature,

the patient has a tolerable chance of surviving. Cases of this class are often so mild, that persons have been known to walk about in seeming good health, and without any evident inconvenience from the buboes." *

The above classification of Sir Brooke Faulkner is the more satisfactory, because it accords in the main points with that of Lange, Orræus, and other experienced observers, in whose writings the fullest confirmation of its correctness may be found. The first species in particular has been distinctly marked by Hodges and De Mertens; and the plague which raged at Florence, in 1348, was evidently of that sort, for Boccaccio mentions, that the patients died on the third day, without any degree of fever. Dr. Russel has given a most admirable history of this most dreadful species, in what he terms his first class, while the second species is comprehended under his three following classes, and the third species under his fifth class.† But more strikingly to show the excellency of this arrangement, it is only necessary to transcribe Sydenham's concise description of the plague, in which the three species are very clearly characterized. "The plague (says this illustrious physician) usually begins with chillness and shivering,

* See Vol. X. page 143, 144, of the Edinburgh Medical and Surgical Journal.

† See from page 97, to page 111, of a Treatise of the Plague. By Patrick Russel, M. D. F. R. S. Formerly Physician to the British Factory, at Aleppo. London: printed for G. G. J. and J. Robinson, 1791.

like the fit of an intermittent; soon after, a violent vomiting, a painful oppression at the breast, *and a burning fever*, accompanied with its common symptoms succeed, and continue till the disease proves mortal, or the kindly eruption of a bubo, or parotis, discharges the morbific matter, and cures the patient. Sometimes the disease, though rarely, is not preceded by *any perceptible fever*, and proves suddenly mortal; the purple spots, which denote immediate death, coming out, even whilst the persons are abroad about their business. But it is worth observing, that this hardly ever happens but in the beginning of a very fatal plague, and never in its decline, or in those years wherein it is not epidemic. Again, sometimes swellings appear, without having been preceded either by a fever, or any other considerable symptom; but I conceive that some slight and obscure shivering always precedes the seizure: now such as are attacked *in this favourable manner*, may safely follow their business, as if they were in health, and need not observe any particular way of living." * If any further evidence were wanted to prove the propriety of distinguishing the plague into the three species above mentioned, it might be adduced from an elegant little tract of Dr. Pearson, to which the reader is par-

* See page 77, 78, of the Entire Works of Dr. Thomas Sydenham, newly made English from the Originals. By John Swan, M. D. London: printed for E. Cave, 1753.

ticularly referred, relative to this part of the subject.*

After what has been said, it may not be improper to draw a short parallel between this complaint and the typhus fever. The first species of the plague, as described above, has obviously a strong resemblance to the congestive, the second to the inflammatory, and the third to the simple typhus; and I apprehend, there can be little doubt that the first species is connected with visceral congestion, the second with visceral inflammation, and the third either with an evident, though moderate excitement of the circulation, or with so slight a degree of fever, as to be hardly observable. The congestive nature of the first species is distinctly denoted by the want of regular and universal re-action; the tendency to coma; the paleness of the countenance; the irritability of the stomach; the overwhelming oppression of the whole system; and the low and quick, or nearly natural state of the pulse, noticed by Dr. Russel and others, though omitted in the description given by Sir Brooke Faulkner. The inflammatory nature of the second species is clearly indicated by the excessively great excitement; the intense pain of the head; the high and uninterrupted delirium; the appearance of carbuncles with a rapidly gangrenous tendency; and those

* See from p. 5, to p. 18, of a Brief Description of the Plague, &c. By Richard Pearson, M.D. London: printed for Thomas Underwood, 1813.

sensations of inward burnings, which have been mentioned by Dr. Russel and many authors beside, and which are the well-known attendants of visceral inflammations. The generally simple character of the third species is too evident to require comment: it often appears to be a milder disease than even the least complicated form of typhus, but sometimes verges upon, and even passes into, the inflammatory species.

Proceeding from the symptoms, we shall find that the internal lesions, which the plague produces, also tend to confirm us in the opinion, that it is inflammatory or congestive in its worst forms. Procopius informs us, that on opening the bodies of those who died of the plague, which raged in the reign of Justinian, a great carbuncle was found within *—language which implies, that the patients had died of inflammation in some of the viscera. In those who perished at Marseilles, within the first two days of the attack, the French physicians discovered by dissection, that some of the viscera were in a state of mortification;† and Dr. Mead, in tracing a parallel betwixt the small-pox and the plague, attempts to prove by positive evidence, that death in both is usually caused by mortifications of those parts.‡ Larrey de-

* The History of Physic. By J. Friend, M. D. The fourth Edition. London: printed for M. Cooper, 1750. Vide p. 148.

† Observations et Reflections touchant la Nature, &c. de la Peste de Marseilles, pag. 47, et suiv.

‡ The Medical Works of Dr. Richard Mead. Vol. II. page 92. Edinburgh: rinted for Alexander Donaldson, 1763.

clares, that he has opened the bodies of many persons who died of the plague, and generally found the same appearances: namely, the omentum, stomach, and intestines gangrenous in some places; the liver in a state of congestion; the gall bladder filled with black fetid bile, and the pericardium with a bloody fluid.* Dr. Pearson has given references to several writers to show, that, in patients who died of this disorder, proofs of inflammation and gangrene have been found in the brain and its investing membranes, in the lungs, and in the stomach, as well as in the intestines—facts surely tending to corroborate the opinion here maintained. But by way of lessening the force of those examinations, Dr. Pearson affirms, that what he calls *pestilential* is very different from *simple* inflammation, not being accompanied by a hard pulse, nor by an exudation of coagulable lymph, but rapidly terminating in gangrene; circumstances, he thinks, which should be well considered by those who might be led by the term inflammation to resort to the lancet.† But admitting, for the sake of argument, that the supposed *pestilential* inflammation is neither accompanied by a hard pulse, nor by an exudation of coagulable lymph, and that it terminates rapidly in gangrene; still it does not legitimately follow, that it is very different from *simple* inflammation, concerning which similar assertions may be justly

* See page 55, 56, of Memoirs of Military Surgery. By D. J. Larrey. Abridged and translated from the French, by John Waller.

† See page 18, 19, of Dr. Pearson's Brief Description of the Plague.

made. As an example in point, *simple* inflammation of the intestines is frequently neither accompanied by a hard pulse, nor by an exudation of coagulable lymph, but terminates rapidly in gangrene. Dr. Pearson has, therefore, failed to prove, that *pestilential* differs from *simple* inflammation, the attributes which he has ascribed to the former, being common to the latter. Besides, contrary to the assumption of this ingenious author, it is well known that the plague is attended, in the first stage of its inflammatory forms, with a hard and strong pulse; and a sufficient number of morbid dissections have not yet been made, to authorize us to state, as a general fact, that the visceral inflammations in the plague are unaccompanied by an exudation of coagulable lymph.

Apparently as an illustration of the peculiarity of *pestilential* inflammation, Dr. Pearson notices, that Lange relates a case of the plague, in which the liver and lungs were so completely gangrened as to crumble between the fingers. But this proves nothing specific in the inflammation, for a similar state of the viscera has been witnessed after the termination of other and essentially different fevers, which had been attended with extreme inflammation or congestion, as may be particularly seen in the works of Dr. Robert Jackson. An instance of *simple* abdominal inflammation occurred in my practice some years ago, which ended mortally in less than twenty-four hours; and, on dissection, the coats both of the stomach and intestines were ruptured, in some parts, by

the slightest touch. The very propriety, therefore, of the epithet *pestilential* may be questioned, as applied to those inflammations of the viscera, which take place in the plague; in fact, like the occult qualities of the ancients, it expresses nothing precise or definite, and like them, also, is calculated to satisfy us with the appearance, instead of the reality of knowledge. Indeed, if its use were once sanctioned in medical literature, we might, by a parity of expression, call inflammations of the viscera, typhous, rubeolous, remittent, and the like, according to the nature of the fever with which they happened to be connected. Buboes and carbuncles generally attend the plague, as rashes the measles and the scarlet fever, and though each local affection may be pathognomonic of a specific malady, yet the visceral inflammation, which may arise in each of those maladies, is not, therefore, to be deemed peculiar and specific;—because it is denoted in all of them by the same or similar symptoms, produces the same or similar consequences, exhibits the same or similar appearances after its termination, and would probably therefore be remediable by the same or similar means.*

If we advance from symptoms and dissections, to inquire into the opinions and practices which

* If these transitory pages should ever be honoured by the perusal of Dr. Pearson, it is hoped that he will make due allowance for the liberties which have been taken with his ingenious tract relative to the plague. The vital importance of the subject has compelled me to differ freely and openly from him in a matter of opinion, but I shall not, hereafter, the less respect his superior talents and attainments as a physician.

have prevailed among the experienced, and into the effects of the various measures employed, we shall still be induced to conceive, that the plague, in its aggravated aspects, is inflammatory or congestive. It has been the custom in Asia, from time immemorial, to bleed in this distemper. Oribasius, the friend and physician of Julian the Apostate, mentions particularly, that being himself attacked with the plague when it raged in Asia, he scarified his leg on the second day, and abstracted two pounds of blood; and adds, that this method not only succeeded in himself, but also in several others.* If then the plague were really a disease of debility, as many modern theorists have contended, how could it be cured by copious depletion? Had blood-letting been directly detrimental, it would, indubitably, have been abandoned ages ago in the East; but we have the authority of Dr. Russel for stating, that it was still universally practised in his time by the Asiatic physicians, though more sparingly than was advised by Oribasius. Nay, he most satisfactorily proves, by numerous cases, that, under various circumstances of the plague, venesection may be safely and even advantageously employed; and he successfully combats, on the ground of his own experience, some objections which have been urged against its causing or increasing a depression or sinking in the pulse. This physician, however, seems to have followed the plan of the

* See page 16 of the fourth Edition of Dr. Friend's History of Physic, before quoted.

Eastern practitioners, having seldom taken away more than eight or ten ounces of blood at once: but is there not reason to believe, that this evidence would have been more decided and favourable, if he had used the lancet more liberally in the first stage of the disease? The abstraction of eight or ten ounces of blood would occasionally stop the progress of some of the highly acute fevers of Great Britain; but as such a mode would most frequently fail, in the violent cases, it might, if commonly adopted, afford arguments, to ingenious men, against the propriety of venesection, even in such disorders. From the most accurate accounts, it appears that the plague is usually more highly inflammatory or congestive than any idiopathic fever of this country, at least it is manifestly more so than typhus; and therefore it may be fairly argued, that it would often require greater depletion for its cure. The best informed authors agree, that the danger in the plague does not depend upon the glandular affections; and if it does not depend upon visceral inflammation or congestion, upon what does it depend? It cannot for a moment be allowed, that the danger proceeds from pure debility, because invigorating measures do not succeed, and because, whenever depletion has been early and decidedly tried, its effects have commonly been very beneficial. Sydenham quotes no less than fourteen authors of great note, who recommend blood-letting, while he himself speaks of its efficacy in the warmest terms, and does not hesitate to consider the

plague, like erysipelas, a most inflammatory affection.* Dr. Mead not only advises venesection, but declares that we must draw blood with a more liberal hand than in other cases, if we are to expect success from it in this complaint.† Two of the most remarkable and at the same time similar evidences, in favour of copious bleeding in the plague, are to be found recorded, the one in Dover, and the other in Sydenham. Both shall, therefore, be cited in the words of the authors.

"The plague," says Dover, "begins as all other fevers do, with intermissions of heat and cold; the symptoms are higher than in any other fever; intense thirst, violent vomiting, pains in the head, back, joints, and all over the muscles; a total failure and prostration of all strength and ability.

"The appearances, which come on in a few hours, are what we call *petechiæ*, or black spots, with a buboe or inflammatory swelling in the groin, or some other of the emunctories. This disease is very soon at a crisis, in three or four days at farthest, but generally sooner.

"When I took by storm the two cities of Guaiquil, under the Line, in the South Seas, it happened, that not long before, the plague had raged amongst them. For our better security, therefore, and keeping our people together, we lay in their churches, and likewise brought thither the plunder of the cities. We were very

* See page 80, 81, 85, 86, of the edition of Sydenham's Works, before quoted.

† See p. 95, of the Edition of Dr. Mead's Works, before quoted.

much annoyed with the smell of dead bodies. These bodies could hardly be said to be buried: for the Spaniards abroad use no coffins, but throw several dead bodies one upon another, with only a draw-board over them; so that it is no wonder we received the infection.

" In a very few days after we got on board, one of the surgeons came to me, to acquaint me, that several of my men were taken after a violent manner, with that languor of spirits, that they were not able to move. I immediately went among them, and, to my great surprise, soon discerned what was the matter. In less than forty-eight hours we had in our several ships, one hundred and eighty men in this miserable condition.

" I ordered the surgeons to bleed them in both arms, and to go round to them all, with command to leave them bleeding till all were blooded, and then come and tie them up in their turns. Thus they lay bleeding, and fainting so long, that I could not conceive they could lose less than an hundred ounces each man.

" If we had lost so great a number of our people, the poor remains must infallibly have perished. We had on board oil and spirit of vitriol sufficient, which I caused to be mixed with water to the acidity of a lemon, and made them drink very freely of it; so that notwithstanding we had one hundred and eighty odd down in this most fatal distemper, yet we lost no more than seven or eight; and even these owed their deaths to the

strong liquors which their mess-mates procured for them.

"They had all spots, which in the great plague they call tokens; few or none of the Spaniards escaped death that had them; but my people had them, and buboes too.

"Now if we had recourse to Alexipharmicks, such as Venice treacle, diascordium, mithridate, and such-like good-for-nothing compositions, or the most celebrated Gascoin's powder, or Bezoar, I make no question at all, considering the heat of the climate, but we had lost every man."*

Sydenham observes, "Amongst the other calamities of the civil war, that severely afflicted this nation, the plague also raged in several places, and was brought by accident from another place to Dunstar castle in Somersetshire, where some of the soldiers dying suddenly with an eruption of spots, it likewise seized several others. It happened at that time that a surgeon, who had travelled much in foreign parts, was in the service there, and applied to the governor for leave to assist his fellow soldiers who were afflicted with this dreadful disease in the best manner he was able; which being granted, he took away so large a quantity of blood from every one at the beginning of the disease, and before any swelling was perceived, that they were ready to faint and drop

* See p. 167, 168, 169, of Dr. Beddoes' Researches, Anatomical and Practical, concerning Fever as connected with Inflammation, where the above passage is quoted at length from Dover's Ancient Physicians' Legacy.

down; for he bled them all standing, and in the open air, and had no vessels to measure the blood, which falling on the ground, the quantity each person lost could not of course be known. The operation being over, he ordered them to lie in their tents; and though he gave no kind of remedy after bleeding, yet, of the numbers that were thus treated not a single person died; which is surprising. I had this relation from colonel Francis Windham, a gentleman of great honour and veracity, and at that time governor of the castle."*

From these curious narratives it appears, that the patients were not only bled very early in the plague but till they either actually fainted, or till they were on the point of fainting; two circumstances of the utmost importance in the cure of highly acute diseases of an inflammatory nature, as the above examples of the plague appear to have been. Though such a practice would be exceedingly censurable if applied in the same rash, indiscriminate way in every case of plague, yet it is an instance of that *experimentum periculosum* which, when once past, has often been so useful in physic, by showing us the good or bad effects of extraordinary measures; and since indeed nearly all the knowledge which we possess in regard to remedies has been derived simply from experiment, these facts may at least embolden us to discard our false fears about debility, and to bleed

* See Swan's Sydenham, p. 87, 88.

in the plague as we would in any other acute affection, with those precautions which the variety and stage of the disease, as well as the age, habits, and constitution of the patient may require. But as we have so many examples of the great efficacy of early bleeding in the plague when used without other subsidiary means, so we might reasonably hope that our success would be still more generally certain, if we united the agency of purgatives, and perhaps of alteratives at the same time. Mr. Price, in an interesting Narrative of the Plague as it appeared in Egypt, has given decided evidence in favour of the persevering employment of repeated doses of calomel and jalap, until full evacuations were induced, and the fever abated; for though he cannot precisely state what proportion of his patients recovered, yet his recoveries far exceeded the ordinary ratio, and as the character of the disease was severe, the success is fairly referrible to the method of treatment. The diet was made strictly antiphlogistic, and the patients were frequently washed all over with warm vinegar and water, both of which adjutants would be unquestionably useful, as much febrile excitement seems to have been developed.*

If we impartially investigate the histories of the plague, as it has prevailed at different times, we shall almost uniformly find, that the cordial plan

* See, in Appendix II. p. 46, of the Fourth Edition of Dr. Hamilton's Observations on Purgative Medicines, a Narrative of the Plague in Egypt 1801; In a Letter addressed to the Author, from John Price, Esq. Deputy Purveyor to the Forces.

of treatment has been attended with the most disastrous consequences in severe cases; and, contrasting these with the good effects repeatedly produced by opportune and free depletion, it will surely be admitted, that we ought not now to be deterred from giving the latter method the fairest and fullest trial, because half-measures have so often failed, or because the modern doctrines of debility have paralysed the right arm of many European practitioners. Indeed it will be evident to every attentive observer, that in those violent forms of the plague, which terminate in a very short time, the purely stimulant treatment cannot possibly be of essential service; partly on account of its general inefficacy in the beginning of all acute fevers, and partly on account of the dangerous character of the particular disease. To neglect therefore so powerful a remedy as depletion, in such cases, is in effect, to leave the unfortunate patients to struggle unassisted with their fate; like those inhabitants of certain countries in the East, who are said to be deserted by their brethren in the extremities of age and sickness. But it may be presumed, that the example which some practitioners have so successfully set, as to the treatment of the yellow fever, will be followed by those who may hereafter witness the plague; and we shall then probably find, that the latter disease, like the former, will cease to be generally fatal, when the palliative plan is abandoned for decisive measures at the commencement. If the suggestion of so humble an individual as myself

were deserving of notice, I would earnestly recommend, that the British Government should form a society for the express purpose of investigating the prevention, nature, and treatment of the plague; or, not being deemed expedient as a State measure, that it should be established by public contribution. Such an institution would be worthy of the country which extends its genius and benevolence to all parts of the world; and the remembrance of it might remain with posterity, when our national greatness and glory shall have passed away, like those of Greece and Rome. Through it perhaps another Jenner might be found to disarm even this human scourge of its virulence; or if it did not lead to so great a discovery, at least the morbid derangements which the plague induces in the vital organs might be more extensively ascertained, and the power of an early and active treatment put to a competent trial. In the ordinary treatment of this disease, it is clear that the means are not at all fitted to the end proposed. There is no natural relation between the inertness of the remedies, and the violence of the symptoms. We might as consistently attempt to stop an impetuous avalanche by a common reed, as to arrest the worst forms of the plague by mere palliatives. The dissections upon record, collectively taken, indicate decidedly, that visceral inflammations or congestions are the causes of death; and when we have found other visceral inflammations and congestions yield to judicious measures, shall we continue to deem those of the plague alone

incurable? Shall we still supinely view this disease, like the superstitious Mahometans, as if it were beyond the reach of human power? Shall we still persist in lulling ourselves into a fatal delusion, by believing that nothing can be done, but to palliate the symptoms? It is surely unworthy of the enlightened age in which we live, to profess that the violence of any disorder is a sufficient reason for not attempting effectually to arrest its progress: such a notion is only calculated to deaden the best sensibilities of our nature, and to extinguish that ardour of investigation which this, like many other subjects in medicine, most imperiously demands.

It is in the beginning of highly acute fevers, probably not excepting the plague itself, that time is of such inestimable value; for there are then truly critical moments, which, if promptly seized, and judiciously employed, enable the practitioner to control the most untoward symptoms, and to prove that the medical art, with all its imperfections, is possessed of the most extraordinary powers. But if by any chance this golden opportunity be lost, the best directed efforts will generally fail to check the ravages of such disorders, which gather force as they proceed, and soon become uncontrollable, by causing irreparable derangement of function and structure. If the plague has hitherto proved generally destructive, it is probably not because it is in itself actually irremediable, but because proper expedients have not been opportunely applied. From the facts on

record, and from the general analogies which obtain in febrile diseases, it is probable, that the simple and the inflammatory forms of the plague might be as successfully encountered as the simple and the inflammatory forms of typhus, and by the same means; for however the plague may be marked as a specific disease by peculiar symptoms, namely the bubo and carbuncle, still the common effects of its cause seem to be precisely similar on the internal organs, when the febrile excitement is fairly emerged; but the congestive form of the plague, happily the most rare, appears to be even more overpowering than that of typhus, and therefore perhaps for it some correspondent modification of treatment may be found necessary. This disease being the only one in the volume concerning which I have spoken without positive experience of my own, these desultory hints are merely intended to awaken inquiry on the subject; yet as the cure of most other acute diseases has been considerably simplified and improved in our times, so one cannot but hope, that an application of common principles to the plague will be followed by highly favourable results.

An ingenious author, Dr. Maclean, has lately endeavoured to show, that the plague is not a contagious disease. In this opinion he has been anticipated and joined only by a few, while there is a vast body of authentic evidence on the other side, among which is included that of Sydenham. It is well known, that Sydenham, like Hippocrates, referred the origin of most fevers to the atmosphere, but so great was his veneration for nature,

that a favourite hypothesis could not bias his mind on matters of fact, and he has therefore expressly affirmed, that the plague is contagious, from the firm conviction of his personal observation. It is a curious circumstance, too, that he states the plague to have regularly prevailed in England about once in forty years; and to what cause, but the quarantine laws, can we attribute our long exemption from the malady since his time? Sydenham was, however, aware that the condition of the atmosphere influenced the rise and decline of the plague, as it influences those of the small-pox, which is known to be contagious. Dr. Maclean has asserted, with equal confidence, that typhus is not contagious, but so far from having defined what he means by typhus, he has evidently mixed it up with the ordinary fevers of this climate which are not contagious, as if fevers had not peculiar as well as common symptoms; and I more than suspect, that he has fallen into a similar error concerning the plague, for under that term he appears not only to have included the disease specifically marked by bubo and carbuncle, but the ordinary, non-contagious fevers of those countries to which he alludes. In reference to the plague, however, I could only cite the authority of others to demonstrate, that it is a specific, contagious disease; but as I can speak from considerable experience on typhus, I shall feel it my duty hereafter to dissent, in regard to its nature, most decidedly from Dr. Maclean, how much soever I may respect his motives and talents.

THE

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THE common continued fever arises from a great variety of ordinary causes, but most frequently from the influence of the weather, and like typhus, which arises from one specific cause only, it has different forms and gradations, presenting indeed, amidst its distinguishing signs, fully as much pathological variation; yet as, in developing these, I shall be compelled to dissent from many received opinions, it will be necessary first to notice the more familiar attacks of this complaint, and afterwards to show how, by a legitimate generalization, it may be made to embrace most of those disorders marshalled under the Phlegmasiæ of modern nosology.

When any one, after having been a little chilly, has some increase of heat on the skin, some rise in the pulse, some whiteness of the tongue, and some muscular and mental languor, he is popularly said to have gotten a feverish cold. This is the very simplest form of the common continued fever, which is neither unusual to children nor unknown to adults; and among the former it is often supposed to yield rapidly to the nostrums

of the nursery, while among the latter it is often removed by sweating or purging. The truth is, that slight seizures of this kind would most frequently end favourably in a few days, through that natural tendency which the organs have to resume their wonted functions of health; but as a medical man cannot in any case be assured, that it will continue of so mild a type throughout, he should always assist nature by those measures which are known to restrain excitement. In a somewhat higher degree of the common continued fever, the chilliness is followed by more heat of the surface, more quickness of the pulse, more foulness of the tongue, and more prostration of the strength and appetite; and from an early period, too, pain or aching exists in the forehead, temples, or occiput, which is often accompanied with a feeling of confusion in the brain, and which is always worse at nights, usually preventing sleep. The excitement proceeds pretty evenly, except that some abatement of it in the morning, and some increase of it in the evening, may commonly be observed, and these ebbs and flows of the fever are usually most distinct where local irritation is not urgent. Even such cases as now alluded to sometimes end well spontaneously by perspiration, diarrhœa, a very copious discharge of urine, or hemorrhage from the nostrils; and then the heat subsides, the pulse grows slower and softer, the skin smoother and laxer, while every trace of uneasiness in the head mean time disappears, with a return of sleep and appetite.

But in other cases left to themselves or maltreated in the beginning, the fever increases, the brain is slowly and at last deeply oppressed, and when the excitement recedes, instead of any amendment, the vital powers rapidly give way. The less complicated forms of this disease, however, are rarely fatal but through neglect of proper expedients at the commencement; yet as this assertion does not so much obtain with its more remarkable varieties, it will be requisite to consider them attentively.

Cases of the common continued fever more forcibly declared from the first, are ushered in by a tolerably distinct cold stage, in which general lassitude and restlessness, with confusion or uneasiness in the head, are the most predominant symptoms. In this stage the pulse is small, quick, and oppressed; the breathing more or less anxious; and the face as well as the whole surface paler than natural. With some dryness or clamminess of the mouth, there is loathing of food; flatulence of the stomach; and often nausea, retching, or vomiting. At the beginning of the milder form, before described, the patient commonly rests upon his side; but in this he is more disposed to lie upon his back from the onset to the end. On the retrocession of the cold stage, which may continue from a few to several hours, the skin becomes preternaturally red, hot, and dry, and the pulse more frequent, full, and vibratory. The face is now flushed, the tongue white and rough; the patient complains of a

deep, dull, or throbbing pain in the head; he feels himself more incompetent to mental exertion than before, and his restlessness and oppression are both increased. The symptoms do not vary much during the first four or five days; except that the head is more uneasy and confused during the night, and that the hepatic, renal, and intestinal secretions become more disordered. A slight remission of the pyrexia also generally comes on every morning, and an exacerbation every evening; and it is to the latter that the increased disturbance of the sensorium at nights is to be attributed. Indeed some degree of intolerance of light and noise, and suffusion of countenance, with great heat of the forehead, and beating of the carotid and temporal arteries early demonstrate an augmented flux of blood to the brain; and if there should not be an obvious tendency to delirium soon after the formation of the hot stage, it most frequently occurs in the progress of the fever. For the first eight or nine days the tongue continues of a white or yellowish colour, and the pyrexia maintains the inflammatory aspect. But shortly after that period, a stage of collapse gradually approaches, and what is termed the nervous symptoms at last become the most conspicuous; the patient sinking into delirium, or into an imperfect stupor with short hurried breathing, dilated pupils, dark tongue, and tremulous hands. In the worst cases the debility daily increases, and death commonly takes place at the end of the second or middle of the third

week, but sometimes later. Where the excitement, however, has been of shorter continuance or of less intensity, favourable signs occasionally appear in the advanced stage; for though the pulse may become weaker as the collapse approaches, the skin and tongue grow moister, and the respiration is not only deeper but more easy: moreover the patient begins to turn upon his side, has more desire for food, falls into refreshing sleeps, and thus recovers by degrees. Yet in such cases, mental alienation now and then continues during convalescence, and, though rarely, even remains some time after the re-establishment of the strength, but I never knew an instance in which it became permanent in an adult. Sydenham has pointed out a similar affection as the sequela of fever, for which he recommends cordials; but laxatives, light diet, small occasional opiates, and the tepid affusions have always appeared to me the best remedies.

Besides the preceding, the common continued fever puts on highly acute symptoms, and unless promptly arrested terminates fatally within the first nine days. From the commencement of such cases there is greater uneasiness in the head in this, than in any other form of the disorder. The voluntary and vital powers are likewise much oppressed in the cold stage, and on the subsidence of the latter, an excessive determination of blood takes place to the brain; from which successively proceed great aversion to light and noise, watchfulness, a marked confusion of the mind, and

often an unceasing and high delirium. An extreme irritability of the nervous system attends the developement of the fever; the arms are tossed about the bed; the head is moved from side to side; and the position of the lower extremities frequently changed. The skin grows exceedingly hot, and is often so preternaturally sensible, that the patient complains when it is only slightly touched; if his head be raised from the pillow he is generally sick; and he frequently has flying pains, now in one and then in another part of the body. Throughout the stage of excitement the face is highly flushed; the breathing quick and anxious; the tongue dryish and foul; the stomach flatulent or irritable. The pulse is not only frequent, but the carotid and temporal arteries beat with considerable force. High delirium or great mental confusion may continue from forty hours to four days, but the one or the other is succeeded by a low muttering delirium, and that again by heaviness or coma; and it is in this last state that an universal collapse of the vital powers occurs. The patient now lies stretched out upon his back, moans a great deal, with his mouth open, and the eyes turned upward. The pupils are dilated and insensible to the stimulus of light, and one of the palpebræ is generally paralytic. Spasmodic twitchings may be observed about the face, but particularly at the wrists; the chest heaves laboriously; the pulse flies with a kind of convulsive agitation; and a superficial glow of heat is diffused over the skin, which is

bathed in a dewy sweat. But the heat soon gives way, the extremities become cold, and the sphincter muscles are relaxed. In this condition life is either very suddenly terminated by convulsions, or it is extinguished in a few hours by the failure of the pulse and of the respiration. This modification of the common continued fever is far less frequent than the two preceding; and after its fatal termination, the body in general runs rapidly into putrefaction.

From the foregoing descriptions, it will appear, that this disease is attended by a mild, a moderate, and an excessive excitement of the heart and arteries; and that the symptoms are apparently modified as the one or the other of those conditions may happen to prevail. When the excitement is mild, the functions of the stomach, of the skin, of the liver, and of the kidneys are more or less disordered; while the uneasiness in the head and the loss of mental and corporeal energy indicate some disturbance in the cerebrum. But if the local and general disturbances of the circulation be early removed by art or by nature, no topical inflammation can strictly be said to exist. It is true, that, next to the brain, the secreting organs appear more especially affected, but morbid secretions alone do not constitute inflammation; since, to give an obvious example, those in the mouth are morbid in many fevers without any evidence of inflammation there. Yet even in the simplest condition of febrile excitement the increased re-action of the large as well as of the ca-

pillary vessels is closely allied to inflammation, and this is proved from the former sometimes passing into the latter; so that the mild may be lost in the inflammatory forms of the common continued fever. Upon various occasions, the system maintains a brief excitement of the heart and arteries with an almost equable distribution of blood; but if that excitement be rapidly renewed, or continued beyond a certain period, a continual fever is produced, with topical accumulations of blood sometimes approaching, and at other times amounting to actual inflammation. If these remarks be correct, it must be manifest, that the mildest variety of this disorder should never be disregarded at the outset; since from mere neglect of proper medicines, or from errors of regimen it might assume a more serious and complex character. In the second modification of this disease, it has always appeared to me, that a low or sub-acute species of inflammation existed in the brain, soon after the full emergement of the fever; for what else could produce the constant pain and load in the head, the watchfulness at nights, the aversion to light and noise, and the gradual approaches of delirium? It is a fatal error in practice to suppose that visceral inflammations are always denoted by excessive pain and other striking signs; and when they are of a subdued character the danger is often the greater, because we are then more apt to be lulled into a false and fatal security. The third or excessive modification is so strongly expressive of an acute

inflammation of the brain, that it can neither be disputed nor mistaken; and as it at once impresses us with an alarm commensurate to its peril, we are prepared to encounter it with our most efficient weapons. Yet if a reference to the symptoms should be deemed inconclusive as to the inflammatory nature of the two last mentioned forms, I might confidently appeal to morbid dissection which, as far as my experience has extended, always discovers distinct traces of inflammation either in the brain itself, or in the meninges.

But though there be cerebral excitement in the simplest, and cerebral inflammation in the most severe forms, and though one or other of those states may be practically considered as the essence of the disease described, yet now and then other textures are incidentally much excited or positively inflamed at the same time, particularly the trachea, the pleura, the liver, and the intestines. The inflammation of these parts may also be of the sub-acute or of the acute kind; and the symptoms will be moderate or severe, the termination protracted or accelerated, agreeably to the presence of the one or of the other. Yet it is the excitement of the heart and arteries which produces these affections by operating upon local predispositions, as shall afterwards be explained. When any of such affections are co-existent, they usually heighten the general fever, and aggravate the disorder of the brain, and in short considerably augment the danger. But

though this disease, in its ordinary forms, is strictly one of simple excitement or of inflammation, yet it occasionally assumes irregular aspects, and it will therefore be proper to allude to these here. In speaking of typhus, I have endeavoured to prove, that, in fevers attended by an universal increase of animal heat, there is a preternatural fulness of blood on the side of the arterial system; and also, on the contrary, that in those where there is a want or an unequal developement of what is called re-action, the venous system is over-loaded with blood. From these premises, founded upon what actually occurs, it must necessarily follow, that more or less arterial fulness exists in the forms of the common continued fever which have been noticed. But it sometimes happens, after an exposure to the causes of this disease, that the skin becomes cooler than natural, the heart's action oppressed, and the whole system so prostrate, that either no re-action takes place, or merely partial and irregular indications of it in the pulse and on the surface. Now in these last mentioned examples, there really is congestion in the venous system, including the right side of the heart under that name as well as those vessels which carry the black blood; but having entered into these morbid states in the treatise just alluded to, little more is necessary than to add, that from whatsoever cause those states may originate, their pathology and treatment are similar. In strictness of received phraseology, the congestive forms

of disease can hardly be denominated febrile, since to fever is generally annexed the idea of an equably augmented heat on the surface of the body; but as a deficiency or irregularity of heat generally ushers in the first stage, and as, instead of being followed by a regular re-action of the arterial system, this state sometimes remains unaltered, venous congestion ought clearly to be considered an essential part of the phenomena, in most febrile affections. However the subject will shortly be resumed, in order to illustrate the rationale of the successive symptoms, in what have been called, erroneously, symptomatic fevers, to which it shall be shown, that inflammation stands in the relation, not of a cause, but of an effect, whenever any thing like a stage of chilliness precedes the excitement.

For the removal of the simplest form of the common continued fever, rest, spare diet, and purgatives will be fully adequate if early adopted. These measures indeed should always be enforced, since in the mildest cases, through neglect, an obscure inflammation of the brain or of other parts might gradually arise out of the general excitement. As catarrh not unfrequently occurs incidentally in all the modifications of this disease, whenever it is present it should be strictly attended to, because it sometimes serves as a mask to the insidious progress of a low species of cerebritis. If with a degree of catarrh there be united, confusion and constant uneasiness in the

head, with restlessness and general oppression, it will often be safest to abstract a little blood by leeches or the lancet at the outset; and afterwards to prescribe tolerably brisk purgatives with a blister to the sternum or between the shoulders. When sufficient evacuations have been premised, the tepid effusions may be advantageously used in the day, or the warm bath now and then. These measures, succeeded by laxatives during the day, and sudorifics, with now and then a small anodyne, during the night, will almost invariably lead to convalescence: but even in that state the regimen should be abstemious for some time, as strong food and diffusible stimuli might re-produce the fever, or pave the way to chronic derangements of the viscera.

In the severer modifications of the common continued fever, the lancet is an excellent remedy. That form attended with a sub-acute inflammation of the brain may unquestionably be often overcome by a steady perseverance in aperients when exhibited from the very commencement: yet it is much preferable to begin by general or local bleeding, since by such a procedure we greatly shorten the duration of the disease, and more effectually prevent the danger of organic lesion. An impression may be made in five minutes by bleeding, which cannot be made in five days by purgatives; and the influence of these two remedies should always be united in all the inflammatory cases of the common continued fever. It must have been ob-

served from the foregoing descriptions, that the progress of this disease is slow when combined with the sub-acute, and exceedingly rapid when combined with the acute kind of inflammation. These differences should always be recollected as they materially influence the treatment. In the sub-acute kind of inflammation, bleeding may be employed beneficially several days after its occurrence, but the acute is so rapid, that bleeding is only useful or even admissible at an early period. Yet even in those examples where there is sub-acute inflammation, the earlier bleeding can be used the better, because in the commencement, it often cuts short the disease at once; whereas at a more advanced period it very often only so moderates the symptoms, that the cure must be finally accomplished by purgatives, and even these will sometimes require the aid of mercurials. When a disordered condition in the vascular system has existed but a short time, it may be speedily removed by decisive measures; but when it has been confirmed by a longer continuance it can only be gradually overcome. If the practitioner bleed at the beginning of the sub-acute sort of inflammation, the blood, usually, should be allowed to flow till the pulse become a small, feeble, fluttering line beneath the finger, whatever quantity be required to produce that effect. On the other hand if he bleed at an advanced period, he must be moderate in the abstraction of the vital fluid: for an error on the side of excess, though it less-

ened the topical disorder, might then destroy all chance of recovery by irretrievably depressing the general powers of the system. On the *first attack* of the inflammatory forms, the strength of the patient is not subdued, but simply suppressed, and therefore he can bear evacuations not only without prejudice, but with the most decided advantage: *at the middle* period of such cases the strength has been affected by the continued excitement, and therefore depletion should be proportioned to the change induced; and as *towards the end*, the vital powers are prostrate by the progress of the disorder, general bleeding, and indeed all copious evacuations are to be avoided as mortal measures.

Opportune and moderate evacuations, together with blisters, will generally arrest cases combined with the sub-acute kind of inflammation; and where they are not likely to succeed, calomel should be given as a salivant, in the mode afterwards to be particularly specified. On numerous occasions I have seen an evident improvement in visceral inflammations from the time that ptyalism took place; in fact very few inflammatory cases have proved fatal in my practice, where it was decidedly induced. But to expect that this expedient should be uniformly successful would be highly unreasonable; since we find other remedies, and those the most approved, sometimes utterly fail in such affections.

When the practitioner is early called to any

case combined with the acute kind of inflammation, he must come not only armed with the lancet, but with the determination to employ it most decisively. The patient should always be bled at the commencement until he is faint; and if this treatment should not afford a marked relief, the operation should be carried to the same extent, at the lapse of an hour. Nay, it is generally best to stay with the patient half an hour after the first bleeding to be fully assured of its effect; and if in that short interval, there be not an abatement of the pain and of the fever, the venesection should again be used without further loss of time. In such urgent examples every moment is most precious, for they gather an accumulating force from delay. By pursuing, however, the plan above mentioned, I have seldom had occasion to have recourse to the lancet more than twice; but then purgatives have been promptly and vigorously exhibited, and these have often been aided by local bleeding, blisters, and repeated doses of calomel. In both the moderate and extreme cases of the common continued fever, local blood-letting is generally beneficial; but as a deep and permanent impression can only be made by operating through the heart on the whole system, it generally should be preceded by venesection. That step having been taken, the sooner leeches, or scarification are employed the better, provided there be any remains of pain or tenderness over a vital region. It is commonly after this sort of

double depletion that I have recourse to blisters in inflammatory fevers: under such circumstances they are sometimes highly useful, but frequently excite the general circulation to a dangerous degree when applied before evacuations of blood. But desirous to give a more particular illustration of the pathology and treatment of the most usual forms of this disease, some fatal as well as favourable cases shall now be adduced.

A stout young man, who was a farmer, had been exposed to a hot sun while ploughing in the middle of the day; and in the evening he rode several miles in a heavy shower of rain. He felt chilly, and passed an uncomfortable night, though he had some sleep. On the following morning he complained of great weight and uneasiness in his head, and became delirious the next day; the pulse being then sharp and frequent, the skin very hot, and the eyes not only red but intolerant of light. The pupils sometimes contracted and dilated with great rapidity; an appearance not unusual in excessive determinations of blood to the brain. The tongue was white and dry in the middle; the respiration hurried; the belly bound; and the stomach flatulent. Retching invariably occurred when the head was raised from the pillow. About sixteen ounces of blood were drawn from the arm twenty-four hours after the developement of the fever; and as soon as the bowels had been freely opened, some leeches were applied to the temples, and a blister was placed between the

shoulders. No benefit resulting from these measures, he was subjected to the tepid affusions three or four times, but without any obvious relief of the symptoms. The head was next shaved, and covered with cold wet cloths, and the cathartic plan more vigorously pursued. Still there was no amendment; on the contrary the patient grew worse, and gradually sinking into a coma, died in convulsions early on the sixth day of the disease. On examining the body after death, the pia-mater exhibited strong marks of previous inflammation, there were many bloody points on cutting into the substance of the brain, but both the thoracic and abdominal viscera appeared natural, except that the gall-bladder contained much dark bile. The cerebral inflammation was here manifestly of the acute kind, and this was the cause of the rapid and mortal termination. In reviewing this case, there are two circumstances to be regretted; the first, that medical advice was not obtained until the fever had existed at least twenty-four hours; and the second, that evacuations were not carried to a sufficient extent when it was obtained. More blood should have been abstracted at first, and the operation, perhaps, repeated at the end of an hour; while the purgatives ought to have been conjoined with active mercurials. Repeated experience has taught me, that nothing but the most decisive measures, at the commencement, can afford the probability of success in similar examples.

After having bathed twice in the sea on the

same day, a pale and rather spare youth, was attacked with head-ache, and feverish symptoms. An emetic and an aperient were administered, and seemed to give some relief; but on the following day the skin became hotter than before, and the head-ache more urgent. Cathartic medicines were prescribed in the morning, and sudorifics towards night, with the tepid affusions. Under this plan, the disease seemed to be somewhat checked for five or six days; but shortly the fever again increased, and the patient expressed alarm lest he should fall whenever lifted out of bed, and he was also averse to light as well as noise. He now for the first time occasionally vomited his medicine and food, and complained of an uneasiness under the false ribs of the right side. Twelve leeches were applied to the temples and the same number to the right side, with a blister to the epigastric region; and purgatives with alteratives were freely administered. But the bowels were now moved with great difficulty, and notwithstanding, no ptyalism was produced. The pulse continued to rise daily; a low muttering delirium came on; and soon afterwards slight squinting with double vision. At last the heat of the skin began to decline, first on the extremities, and then on the trunk. The patient lay moaning upon his back, with an immoveable pupil, and a slow, deep, and interrupted respiration: in this state he expired, in the beginning of the third week after the attack. On dissection, the pia-mater showed distinct signs of inflamma-

tion; and about three ounces of serum were in the lateral ventricles. The viscera of the thorax appeared natural, but traces of what are usually called increased actions remained on the liver and intestines. This was a case in which the inflammation of the brain and of the abdomen assumed the sub-acute character; and it was therefore more protracted than the preceding. It is perhaps difficult to say, what might have been the result of a more vigorous plan at the outset; but I have certainly since seen similar instances, which were successfully conducted by early bleeding, promptly followed up by purgatives, with alteratives, and blisters.

An athletic man, aged thirty years, fell from a boat into the river; and though taken out almost immediately, remained some time in his wet clothes. He became very languid, felt great feebleness of the lower extremities, and had a strong shivering fit, on the abatement of which a violent re-action of the heart and arteries succeeded. What he now chiefly complained of was a violent throbbing pain in the forehead, accompanied with load and sickness of the stomach, and with some uneasiness in the site of the liver. The pulse was hard and strong, the tongue white, and the breathing anxious; and to these appearances were added, aching in the eye balls; extreme irritability of the whole body; inflation of the epigastrium; and a dull confused state of the mind, with an evident loss of memory. From the concourse of symptoms, no doubt remained, that an active in-

flammation had commenced in the brain or its appendages, combined with an affection of the liver, and perhaps of the stomach. He was therefore bled from a large orifice, supported in the erect position, until the pulse became a mere thread, and the face pale: syncope supervening he was immediately laid flat upon the bed. About twenty ounces of blood were drawn by measure; and on its separation from the serum, the crassamentum was cupped and covered with a thick buffy coat. The patient continued languid for more than a quarter of an hour, soon after which the fever returned with nearly as violent an excitement as before. As the head had not been so much relieved as might have been expected, twelve additional ounces of blood were abstracted; the patient fainted a second time, but the effect was most decidedly beneficial. A large dose of calomel and jalap was administered, and its action speedily determined to the bowels by repeated draughts of senna, combined with the sulphate of magnesia. These medicines operated copiously, and still further alleviated the symptoms; yet as he had some uneasiness in his side a blister was applied there, and the purgatives daily and freely repeated. By the rapid succession of these active measures, this patient was soon convalescent; but his mouth was sore above a week after his recovery, from the full doses of calomel which he had taken. This case shows very strikingly the great utility of prompt and powerful evacuations. Their speedy influence will not surprise those

who have watched and seized that brief period of acute disease, in which depletion is every thing; that brief period which, once lost in doubt and indecision, too often fatally reveals, that human agency is afterwards nothing. The timorous may dread and the speculative rail against such determined depletion in highly acute fevers, but, when used at the very onset, in patients who had been previously well fed, it will generally fulfil the most sanguine expectations; and in such, indeed, its superior efficacy will be firmly established by future experience, when the dreams of theory and the dogmas of authority shall only remain as the vestiges of exploded prejudice and error.

A medical gentleman was seized with an indistinct feverish disease; he was alternately hot and chilly, loathed food, and had a dull uneasiness in his head, with oppression of the præcordia. On the morning of the second day, he took a large dose of calomel with other drastic purgatives, but notwithstanding, he grew much worse towards the evening and my assistance was requested. He then complained of much prostration of strength and of a deep, dull uneasiness in the brain, attended with a sense of fulness and confusion; and the uneasiness was most distinctly felt on shaking the head or bending it forwards. That sort of restlessness, which we technically term jactitation, in him was very apparent: for if he attempted to lie down in bed he got up again in a few seconds;

then sat down upon a chair, and immediately rose, thus incessantly changing his place and position. The surface was hot and dry, the face flushed; the countenance expressive of uneasiness and anxiety; the tongue foul; and the pulse above 120 in the minute, small and hard. Being resolved if possible to make an immediate impression upon the disease, I advised this gentleman to be bled until syncope approached; he readily agreed to the proposal and accordingly about twenty five ounces of blood were drawn, when he became faint, and vomited a great deal of crude, sour, and bilious matter. His arm was bound up, and he was laid upon the bed. As soon as he revived he expressed himself most sensibly relieved, and his pulse had become considerably softer, and the skin felt moist. Brisk purgatives were prescribed for about two days longer, when he was completely convalescent; but as a precautionary measure, he adhered to a spare regimen, and took some aloetic pills every night for about a week afterwards. This would have been a serious case, but for the early employment of evacuants; and the patient himself was fully of that opinion after his recovery. Many years before, he had been attacked precisely in the same way while in the Mediterranean. As the treatment at that time was merely palliative in the first instance, he gradually sunk into a low delirium: after having lain some days in a state of insensibility, an active mercurial course was prescribed

by a friend; and when his recollection returned he found himself most completely salivated, and from that period recovered apace.

A tall young man, of dissipated habits, seemed unusually dull for two or three days, but made no complaint except of slight uneasiness in the head; he even pursued his ordinary occupations, and one cold morning in December attempted to amuse himself by shooting along the sea-shore. He came home in the afternoon much fatigued; and about five o'clock was attacked with a cold shivering and felt such feebleness in the lower extremities as to be unable to stand. In about two hours an intense fever followed, which was soon attended by delirium. It was about midnight when I first saw him, and he then raved loudly and incessantly; but there was something peculiar in his frenzy. He suddenly passed from the extreme of joy to that of grief. From inquiry I ascertained that a near relative had died some time ago, and that he had recently been engaged to a young woman to whom he was greatly attached; and it was to the death of the former, and to the excellencies of the latter, that his mind alternately turned. Whenever he mentioned the name of his relative he seemed oppressed with affliction; in a few moments he referred to the other subject, and was apparently in a transport of with delight, so strange and incongruous are the associations of a disordered intellect. The pulse was full, bounding, and strong; the whole surface very hot; the face turgid and deeply flushed; the

eyes were blood-shot; and the countenance had a wild expression. From the commencement of the excitement, he had complained of an excruciating pain in his head, and of a great load at the stomach; but to all my questions respecting these as well as other points, no answer was returned by the patient; though I observed that he had frequent eructations, and short convulsive twitchings of the upper extremities. The evidences of a very acute inflammation of the brain were here surely most manifest, and the danger was therefore considerable. Without loss of time a vein was opened in each arm; and probably about twenty-four ounces of blood might have been drawn when he became faint. The effect of the operation, thus performed, was superlatively efficacious. There was not only an immediate relief of the more urgent symptoms, but the rapid abstraction of blood led to a speedy convalescence; nothing more being required than the application of a blister, and an active repetition of purgatives for three or four days. In reviewing the result of these simple, though vigorous measures, it must be recollected that the violence of the vascular excitement had not existed many hours when they were adopted; and it will almost invariably be found, that a morbid action of an acute kind is the more easily reduced in proportion to the shortness of the time which it has existed. Yet it may be observed, that this patient had been slightly indisposed by an uneasiness in the head before the decided attack; and this previous dis-

order had determined the seat of the topical inflammation, which arose so rapidly in the stage of re-action. On many occasions there are slight local derangements before the occurrence of fever: when they have been but of *brief* continuance they do not materially aggravate the character of a supervening inflammation; but when they have *long* existed before an inflammatory attack, the issue of the latter often is thereby rendered more doubtful.

After having been heated and fatigued, a middle aged woman was exposed to cold, and became rather chilly and restless. For two or three days she complained of load and confusion in the head but had no fever. While in this state she was thrown into great alarm by the reported death of a relation; and from that period the uneasiness in the head was much augmented, the skin gradually grew very hot; and though she did not vomit, she felt considerable sickness at the stomach. Purgative medicines were now diligently exhibited for five days, but the pain in the head suffered no abatement: on the contrary it was more severely felt, and there were slight wanderings of the mind during the night, with some intolerance of light and noise. On the morning of the sixth day from the developement of the fever, about twelve ounces of blood were taken from the temporal artery, which gave a marked alleviation; the pain of the head, however, again increased in the evening, and about the same quantity of blood was abstracted from a large orifice at the arm.

The patient was a second time relieved, but the symptoms once more returning, though in a lessened degree, it was now determined to apply a blister to the nape of the neck; and to exhibit calomel in large doses during the day, and in smaller ones in the night, that the bowels might be kept soluble, and the system fully saturated. In about four days ptyalism was established, and from that time there was a progressive though a slow recovery. The employment of the lancet was too long deferred in this instance, but it shows that moderate bleeding may be useful at a late period in sub-acute inflammations; and that a combination of the purgative and the alterative plan is highly efficacious after such an evacuation. This case also exemplifies the influence of cold in predisposing to affections of the head; while it demonstrates that mental agitation may be an immediate cause of the common continued fever. One case more and the illustration of this disorder shall be concluded by some general remarks.

A young woman danced so much one evening as to induce copious perspiration, and considerable fatigue. She walked home and being thinly clothed was drenched with rain. On going to bed she complained of a cold creeping of the skin, and though very weary passed a sleepless night. She vomited her breakfast the following morning, and was then evidently feverish, having an urgent thirst and a hot and dry surface. Some medicines were administered by her friends to make her perspire, and her feet immersed in warm water;

but she grew worse, as the day advanced, and the medical attendant of the family was consulted. Finding that she had pain and giddiness in the head, with tense pulse, he took away about ten ounces of blood from her arm, and sent her a brisk purgative. She was somewhat better from these expedients, and had a little sleep on the succeeding night; yet she became worse the next evening, complained more of her head, and showed some signs of an approaching delirium. The fever was now much higher than before, and, having more oppression of the præcordia, she was morbidly sensible as well to light as to noise; and moreover she shrunk from pressure applied to the right hypochondrium. It was at this period that my opinion was requested; and the surgeon in attendance agreed with me in the propriety of abstracting more blood. She was accordingly bled till she fainted; a blister afterwards applied over the region of the liver; and large doses of calomel exhibited, with other cathartics. On the following day there was less of general oppression and of local uneasiness; but as the pulse still continued quick, and the skin hot, we resolved to unite purgatives and alteratives. Six or eight copious motions were procured daily before bed time, and small doses of calomel repeatedly administered at night: this plan was pursued nearly a week, when the mouth became sore, and the patient convalescent. In this case the attendant inflammation was seated in the brain and liver; it was checked

by the repeated evacuations, and finally removed through the agency of mercury.

The cases just adduced all occurred in subjects belonging to a country district, but many precisely of the same nature have been presented to me in the metropolis, and where the patients had been previously accustomed to nutritious food, and exercise in the open air, they have certainly borne depletion as well as those resident in the country; and it has only been in such as were very sedentary, or very intemperate, or who suffered the privations and anxieties of extreme poverty, that the cautions before inculcated became so essentially necessary. It is common to assert, that the inhabitants of London not only cannot bear evacuations so well as those of the country, but that the same disease in the former often requires a treatment almost opposite to that suitable to the latter. Now with regard to the first part of this proposition it appears to me only true when applied to the most enervated portion of the population of London, since there are immense numbers who resemble in every thing the inhabitants of the country; and with respect to the second part of the proposition it appears to me erroneous, for I have not met with any disease in the metropolis which requires a treatment almost opposite to that which would be proper in the country, though fully convinced that the same principles of cure frequently demand to be modified in their application. The moral dispositions

of the highest and of the lowest orders of society often approximate at some points, because the one is comparatively placed above, and the other beneath the influence of public opinion; and, in like manner, a similar relaxation of the body is sometimes produced, from superfluous luxuries and late hours in the first, and from the deprivations of penury in the last. But as there is still much moral worth in the higher, and in the lower classes of society, so there is also much physical energy even in large towns; and the sum of both will be vastly increased if we take into account that middle order where the soundest minds and the soundest bodies are perhaps the most numerous. In speaking, therefore, of any medical treatment as applicable to London we should recollect, that we speak of an empire itself, of a place comprehending upwards of a million of people whose modes of life are exceedingly diversified; and so far from asserting, in one sweeping clause, that this or that practice is suitable or unsuitable in London, we should endeavour to ascertain the various peculiarities of each class of the population, and to point out those circumstances in each which materially or even slightly relate to the expediency of modifying the methods of cure. Perhaps at a future period I may communicate some particulars on this topic, but as these will probably be very limited, I would recommend an extended investigation to those practitioners who live in the metropolis; for if the peculiarities here alluded to were correctly registered with all their

practical bearings, the facts communicated would go far to remove much of the uncertainty which exists respecting the influence of the habitudes of civic life on the body. But to return to the common continued fever, it may be remarked, that in every rank of society evacuations are, upon the whole, better sustained than in typhus, there being in the former nearly always more force and fulness in the pulse, and less general depression than in the latter. These differences are not only observable at the beginning, but during the greater part of the common continued fever, so that general and, especially, local bleeding may often be beneficially used at a period when it would be highly hazardous in the genuine, contagious typhus.

The common continued fever attacks people of all ages and constitutions, but especially those exposed to the vicissitudes of the weather in a weakened state; and indeed what is popularly called cold is by far its most usual cause, though sometimes it arises directly from the excitation of heat, and occasionally from errors of diet, and fatigue of body combined with mental anxiety. It is often rife in summer when the atmosphere is moist, the heat in the middle of the day rendering the system susceptible of the chills of the evening; and for the same reason the inhabitants of the warmer regions are much afflicted with it, as they are liable to be exposed to a burning sun in the day, and to the cold damp dews at nights. The different gradations of this disease from its mild, its mo-

derate, and excessive excitements may be found in the epidemics of Hippocrates, who has even detailed some of those cases, which, on account of the re-action not having been developed, strictly deserve the character of congestive; yet our systematic writers, following the example of the ingenious Cullen, have not marked these modifications of this disease, but obscured or lost them in nosological refinements and distinctions. The common continued fever has been distinctly noticed by Willis, and the works of Sydenham abound with descriptions and discussions respecting it, though both these authors assign to it various appellations; in fact all those fevers of a continued type, which Sydenham noticed as so particularly connected with certain constitutions of the atmosphere, are clearly varieties of this complaint. Moore in his Medical Sketches has given a tolerably distinct outline of it in what he calls the inflammatory fever; but the best delineations of it are to be found, under different names, in the writings of our naval and military practitioners, whose labours, in ameliorating the miseries of war, improved the practice, and adorned the science of physic. There cannot be a doubt but this disease appears in all climates. It is certainly most prevalent in those where the atmosphere is most variable, and agreeably to my observation, it is one of the most frequent disorders of Great Britain, even when limited merely to those modifications in which the head is slightly or severely affected. Cullen has made an approximation towards elucidating these modifications of

the common continued fever, under the terms synocha and synochus; but though the vital principle of genius pervades his nosology more than any other of his works, yet his definitions, neither applicable to the simple nor complex cases, show that his ideas were not distinct on this subject. Agreeably to his notion, in synocha, the heat is greatly increased, the pulse frequent, strong, and hard, and the sensorial functions only slightly disturbed. Now in the mildest variety of the common continued fever, the heat is not greatly increased, and the pulse is seldom precisely such as he has mentioned, while in the the more urgent, the sensorial functions are much disturbed, and the pulse varies, being contracted and small in some, strong and full in other patients. The definition of synochus involves that of typhus, and is one in all respects so exceedingly important, and, if I mistake not, so exceedingly erroneous in a practical view, as to demand a more minute examination.

Cullen defines synochus to be a contagious fever compounded of synocha and typhus, synocha in the beginning and typhus in the progress and towards the termination. This is one of those bold assertions by which men of genius apparently simplify an abstruse subject, and thereby at once captivate a multitude of minds; and the truth is, that this single assertion has actually had an immense influence on medical opinion and practice in modern times. If synochus be a contagious disease, why was it not made a variety of typhus? And if it be not a contagious disease, why should

it be made a part of typhus? Even from Cullen it would appear that synocha is not a contagious disease, and as, according to his definition, synochus is synocha in the beginning, it is not therefore contagious at that time; and if it become really typhus in its progress, then a contagious essence is generated which did not before exist, then indeed one disease has actually been converted into another having a perfectly new attribute. But have we any other example in medical literature where an ordinary disease not having the property of contagion at the beginning is converted during its progress into a specific disease having the property of contagion? If the fact be as implied in the definitions of this illustrious pathologist, it surely forms an anomaly in our historical records. The described modifications of the common continued fever, the synocha and the synochus, arise from ordinary causes, such as cold, heat, and the like, but typhus arises from one specific cause—contagion: now in the course of my experience I cannot recollect a single instance where a fever proceeding from such ordinary causes was changed into one possessing the specific contagion of typhus, and therefore I am strongly disposed to conclude that the thing never happens; though upon a point of such vast concernment it does not become me to speak with positive assurance, as the opinions of many discerning men are on the opposite side of the question.

The acute and learned Dr. Bancroft, and an anonymous author alike distinguished for talent

and research,* conceive that contagion directly originated in the first instance from the Deity. As it is self-evident, that the first case of contagious fever was independent of any other case, it is natural to ask how has contagion been produced? When the ancients were puzzled by any physical phenomena, they always had recourse to supernatural agency for an explanation, and thus inquiry was suppressed; and now to consider contagion as a direct emanation from the Deity is surely as unphilosophical, since as far as we know, the Deity operates on matter not directly, but through fixed and secondary laws. It is therefore more consonant to the general analogies of nature to suppose, that the various specific contagions have originated from combinations of physical elements, and that these contagions have afterwards propagated themselves by the peculiar powers impressed at their first generation. But if this view of the subject be correct, why cannot we trace the origin of particular contagions to various eras in the history of physic, and why do not fresh contagions now arise from the combinations of physical agents? In answer to these questions it may be remarked, that there is a limit fixed to physical combinations, and that as the world has existed so many ages, most if not all of the combinations that could take, may have long since been completed; and hence we have no distinct record in

* See a most able article, on the Contagion of the Plague and Policy of the Quarantine Laws, in No. 26, p. 439, of the British Review.

history of the generation of particular contagions, and hence too, perhaps, we have not sufficient reasons from past experience to expect the generation of any new one, except in some great revolution of time. If indeed the Deity had assigned no precise boundaries to the formation and propagation of contagions, the human race could scarcely have struggled against their destructive influence; but happily their number is so few, and their modes of communication so far ascertained, that it is within our compass to limit their progress, nay perhaps to destroy their very existence. For if it should be found true, that the genuine typhus, like the small-pox, measles, and other known infectious distempers, invariably proceeds from a specific poison, then not only typhus but all these distempers might probably be eradicated, by preventive expedients. To give an example, it can hardly be doubted that the small-pox might be banished from this country, even independent of the excellent aid of vaccination, by dividing the towns and country into so many medical districts, with appropriate Boards of Health; so that as soon as ever any case of small-pox appeared, the patient might be immediately removed from all intercourse with Society, and only restored when recovery was complete;—when all chance of propagation had ceased, from the thorough destruction of every thing like fomites, and from so strict a cleansing and ventilation as to extinguish the contagion or dilute it to an efficient and harmless degree by atmospheric air. It would

really seem from history that most of the contagious diseases have been generated not in every climate of the globe but only in certain ones, and this remark particularly applies to the East, whence some of the deadliest have issued. Even granting for the sake of argument that a contagion once destroyed might be regenerated *de novo* in the place of its first birth, still its diffusion in that and other nations might be prevented. If the suggestions of such philanthrophists as the venerable Haygarth had been properly attended to, what lives even in this country might have been saved, what domestic afflictions might have been averted; and since we cannot but regard the whole world as united by one common bond of brotherhood, what a pity it is, that some enlarged plan is not formed to shield mankind as much as possible from the calamities of contagious diseases. To many this may appear the language of enthusiasm, but nothing ever great or good was accomplished without some infusion of that active principle, which when properly directed may be made to lessen our physical wants as well as to adorn our moral and intellectual nature; and surely if nations would cordially league together for the general good, our social condition, in many respects, might be considerably ameliorated by mutual interchanges of all the best charities of life—and then mind at last might be every where rewarded for acts of beneficence, and for discoveries of utility.

If it be the fact, as I am inclined to believe,

that genuine typhus always originates from contagion, how can the present epidemic be accounted for, which has raged in so many parts of the united kingdom for at least the last three years? My own observation would lead me to infer that what has been so generally called *the* Epidemic is not one specific fever, but three fevers, especially different in their exciting causes; and these fevers are, namely, typhus proceeding from a specific contagion, the common continued fever proceeding mostly from atmospheric influences, and a peculiar fever which arises from the huddling of many human beings together, in confined and filthy situations. A few words, therefore, shall be said about the distinguishing signs of each of these affections.

Cullen defines typhus to be a contagious disease, in which the heat is little increased, the pulse small, weak, and for the most part frequent, the urine little changed, the functions of the sensorium greatly disturbed, and the powers much diminished. Contagion is certainly the first essential of typhus, but in the simple and inflammatory forms of the disease, the heat is often considerably increased, and the pulse neither small nor weak, though always quicker than natural; and in the congestive forms of the disease the heat is either not increased, or concentrated in some particular parts, while others are frequently even below the ordinary standard of health. As for the urine it is often much changed in the course of the simple and inflammatory

varieties, while in the congestive it is usually paler than natural at first, but in the progress of the complaint is sometimes tinged with bile. With the exception, therefore, of the contagious attribute, we cannot rely upon the circumstances just enumerated, as any way strictly pathognomonic. The disturbance of the sensorial functions, however, and the prostration of the moving powers are remarkably characteristic of true typhus. In the most frequent forms of the common continued fever, the patient has uneasiness in the head, but he has a bright eye and a countenance indicative of no mental depression or despondency, and he lies in a position which displays some command of muscles, and can move about the bed or get up with a tolerable effort: on the contrary in genuine typhus, the eye always wants animation, the countenance has a dull, wearied, depressed, and often desponding expression, and the patient lies in a comparatively relaxed position, and moves himself more languidly, almost like one worn out by loss of sleep, and from some unusual fatigue. In the common continued fever, the patient commonly has not much inaptitude of mind, often answers questions readily, and in a pretty firm voice, without much increased agitation of the breathing; whereas in typhus, the answers are mostly given with languid slowness and reluctance, and much speaking obviously disturbs the respiration. In the common continued fever, the skin is generally of a brighter red than natural, especially on the cheeks; on the contrary, the skin

is always more or less of a dusky colour in typhus, and an admixture of it may be best observed in the flush of the face. This duskiness of the skin is one of the proper symptoms of typhus, and seems to arise from some change in the constitution of the blood, which I have almost invariably seen darker on dissection than in ordinary fevers. In the worst cases, this duskiness increases in the progress of the disease, and lessens in those that assume a mild aspect. So very characteristic is this cutaneous duskiness, that I think I could distinguish typhus by it at any time, if two patients were presented to me, the one labouring under that disease, and the other under the common continued fever. In typhus the tongue has an early tendency to become brown and dry—in the common continued fever it is always white and often even somewhat moist for the first week : in typhus the pulse is variable as to force and frequency, but it is seldom very resisting to pressure —but in the common continued fever it mostly resists firm pressure of the finger, from the freer stroke of the heart.

The above remarks are certainly most appropriate to the first and middle stages of the ordinary instances of typhus and of the common continued fever; for in the last stage of both, many of the symptoms so approximate as to make them more nearly resemble each other, though then the one *is*, and the other is *not* contagious; at least I have seen many patients in the advanced stage of the common continued fever with those signs deemed putrid, and yet never knew any of them infect

their attendants with typhus. When however an accurate history cannot be obtained of the primary cause and previous symptoms of a case, in which the diagnosis is in the least degree doubtful, we should adopt measures proper to guard against contagion: even if time should prove such precautions to have been unnecessary in some instances, it is the safe side to err upon in the main; and where there is any ground for just hesitation, what practitioner ought to risk human health and life in the vain confidence of his own discernment? That constitutional derangement which, by a general term, we designate fever, is but an effect which proceeds from different sources; and that effect may be so modified at its commencement or acme as to express the real nature of the disease. But at advanced periods, the character of numerous acute complaints, accompanied with fever, is marked by many common symptoms; and these often become so predominant as to obscure those pathognomonic appearances which were conspicuous in the first stages. I have known some sensible men of considerable experience, who have been led to doubt even the existence of the distemper which I have called typhus, and deemed contagious. They became sceptical on this point from having never known any continued fever, unaccompanied with an affection of the skin, spread by contagion; and believe that the disease here described under the name of the common continued fever, has erroneously been supposed to be contagious from the marks of malignity often attendant upon its pro-

gress. It is known that contagion is an invisible essence, which like the human mind, is only manifested by its operations; and as the operation of other powers so frequently resembles that of certain contagions, we cannot be surprised if we should sometimes be mistaken or doubtful as to the contagious or non-contagious nature of a disease. It was unquestionably far too much the fashion at one time, to refer continued fevers to contagion, and this has been most satisfactorily shown, by many British and American practitioners; but in abandoning one extreme, we must not run into another, and doubt or deny, that any fevers of a continued type are contagious, except the exanthemata. It is certain, that if a number of individuals be exposed to marsh miasmata, or to a cold, wet, or very variable atmosphere, they may become affected with fever at different periods of their exposure; and thus a presumption might be formed, without any just foundation, that the disorder propagated itself from one to the other by contagion. Yet where no such causes as the above operated, if a continued fever, with certain peculiar signs, seized person after person, and only attacked those who had been exposed to the sick or to their attendants, could we reasonably doubt its being contagious? In the course of my experience I have collected some curious histories, from patients who had no theory to support, which proved that whole families and relations had been implicated, during their intercourse, from one case of typhus; though the visits which

some of these persons made to each other, as alternately attacked, had often been short, or at considerable intervals, on account of the great distances at which they resided. Having frequently, I repeat, met with such facts, I cannot but express my firm opinion that typhus is a contagious disease, the evidences indeed of which to my mind have been as convincing, in its successive seizures of different individuals, as that a flame if not prevented will spread from house to house; and as in this respect, therefore, I believe it to be signally discrepant from what has been denominated the common continued fever, it may be proper next to examine the difference, which exists between it and that disease which derives its exciting cause from the accumulation of human beings under certain contingencies.

When a great many persons are confined together in too small a space without proper ventilation, when they allow that space and themselves to be loaded with filth and offensive effluvia, the local atmosphere is so liable to be tainted as to become an exciting cause of fever to those who breathe it; and its influence will be more extensively felt if those who are surrounded by it should be badly fed or have anxious minds, as these, by debilitating, predispose the body to the operation of the exciting cause. Many examples might be found where a fever seems thus to have been generated, especially in jails and camps in which cleanliness and ventilation had been neglected; and I have been credibly informed that such have

occurred in the holds of ships at sea, though probably they are comparatively rare in those situations from the motion, volume, and freshness of the air outside, which must necessarily ensure some ventilation within. The fever which I have seen produced by the combination of circumstances here specified, has a resemblance to typhus, and is often attended with petechiæ from an early period of its appearance; but it was marked by a most profound prostration of the appetite, while the brain was much less embarrassed than in typhus, and the constitutional disturbance rather indicated a low fever of irritation than of phlogistic excitement. From the agency of fresh air, purgatives, sub-acid drinks, tepid ablutions, and a light diet of bland vegetable liquids, the petechiæ in general rapidly receded, and convalescence was speedily established. Indeed in this as well as in the common continued fever, the disease could very often be cut short by proper treatment at any stage of its duration; but this is not the case with typhus, which having once existed for a few days will generally hold a determinate course, in despite of every expedient. This fever of filth and noisome effluvia is not of a contagious nature, at least so far as my limited observation reaches: for I have not known any patient removed into a pure atmosphere infect another person, and this has often occurred to me in typhus. A distinction has been attempted to be made between *infection* and *contagion*, and in a certain sense this distinction is assuredly justifiable. An atmosphere may be said

to be *infected* when it excites fever in those who are exposed to it without communicating an attribute to that fever by which it can propagate its kind indefinitely from the first to second and third persons. It is thus that the marsh and similar effluvium might be termed an *infection*, and it is also thus, I suspect, that we have many other peculiar states of the air yet unascertained, states merely the exciting causes of fevers, which do not generate *contagion*, an essence capable of maintaining itself by successive re-productions in those upon whom it operates.

The states of the air just alluded to as the exciting cause of febrile disease may be limited or extensive, as for example in the tainted precints of an hospital or house in the one instance, and that peculiar constitution of the atmosphere in the other, in which a non-contagious disease rages epidemically and widely. With respect to the former it is well known, that attacks of erysipelas are more common in hospitals than in private houses, so much so in fact, that I have known few patients escape at certain seasons of the year: even in private houses, catarrh will sometimes seize those members of a family successively who had been most confined within doors, while those escape who are much abroad; and yet both in such cases of erysipelas and of catarrh I have never been able to satisfy myself, that either spread by contagion, but have rather imputed them to some local and common taint of the air. It would indeed be a most important thing if it could

be fairly inferred from impartial observations on the sick, that an erysipelas, catarrh, or common continued fever originating from some such ordinary cause as cold, generated in their course specific contagions, which afterwards produced erysipelas, catarrh, or typhus in others; for then by most attentively noting the circumstances under which an ordinary became a peculiar disease, we might probably prevent the final formation of the contagious principles, by instituting necessary and perhaps now neglected precautions; while the conflicting evidences which have so long agitated the medical world might at last be set completely at rest. Few men have entered upon the question of contagion quite unprejudiced, and many have sought for facts merely to confirm some speculation first framed in the closet; so that it is not likely for me entirely to have avoided a bias which has influenced the opinions of men so superior for talent and attainment. All the observations, however, which I have been enabled to make incline me to believe that a fever is never contagious except it originates from a *specific* cause; and hence I am inclined to doubt the commonly received opinion, that diseases proceeding from an ordinary cause may become contagious in their course, from the influence of internal or external circumstances. Yet I wish it to be distinctly understood, that I do not speak positively respecting this subject, but would rather leave it to be settled by future inquirers, when more minute and extensive facts shall have been accumulated. To

assert, as one able author has done, that no combination of external or internal circumstances can generate a contagion which did not previously exist, is surely to pre-suppose, that we are acquainted with all the internal and external combinations which can take place—an extent of knowledge which we do not and shall never possess; and since it is most consonant with the principles of philosophy to suppose, that contagions were originally formed by the combination of internal or external circumstances, it is but fair to infer that the known ones might at some æras be thus formed anew; as combinations which had once occurred appear to have a greater chance of occurring than not of occurring again, in the circle of ages in which the world may be destined to revolve. No disease has embarrassed me more than what is denominated the puerperal fever, having known it to occur sporadically in some cases where it could not be traced to contagion, in others epidemically where the influence of the atmosphere as well as contagion might have justly been suspected as causes, and again in a third class of cases, in which a tainted state, a mere local infection of the atmosphere which the women breathed, really seemed to excite the disorder. Now if the puerperal fever be defined, an affection of child-bed attended with a general disturbance of the functions, an increase of the animal heat, an acceleration of the pulse, and evident or obscure symptoms of abdominal inflammation, these symptoms might arise from cold or other ordinary

cause in one instance, from an epidemical constitution of air in another, and from contagion in the third; for the first operation of each of these causes would be a general shock to the system by which all the functions would be disturbed, and the abdominal inflammation would arise as a common effect of these different causes, because the peculiar state of the peritoneum and attached organs, would in all give a strong tendency for the main force of the ultimate excitement to be concentrated there. Nevertheless if the preceding views be correct, none of these cases in all probability would be propagated by contagion, except that which actually originated from contagion; and from careful reflection on the facts which have come before me I am led to think this conclusion true concerning the puerperal fever, and strongly suspect, that when contagious it is nothing but the genuine typhus modified by the puerperal condition. In corroboration of this last opinion, I could adduce some examples which appeared to be contagious, and which, in combination with the abdominal symptoms, had many of the pathognomonic signs of true typhus; but this would lead into too long a digression, and I merely throw out these desultory hints, in order that we may be led to ascertain whether typhus ever be identified with any of the modifications of fever occurring in child-bed.

We know little or nothing in regard to the peculiar constitutions of the atmosphere in which certain non-contagious diseases epidemically pre-

vail, nor indeed of those constitutions which favour or suppress diseases actually known to be contagious. Chemists have told us, that the atmosphere of our globe is composed of three ingredients, namely oxygen, carbonic acid gas, and azote; and they have satisfactorily shown us many curious properties of the two first, but they seem to have almost forgotten that to denote the remainder of the atmosphere by the term azote is a mere covering for ignorance. When we recollect, the infinitude of chemical and mechanical changes which are constantly taking place upon the earth's surface, common sense at once informs us, that this azote, this *caput mortuum* of chemists, must necessarily be composed of a vast many things; and it appears to me exceedingly probable, that the various admixtures and decompositions of these things, together with the electric states, heat and density of the air, may be concerned in the production of those atmospherical constitutions in which epidemical distempers rise or decline. At all events, it is desirable, that we should endeavour to analyze that curious compound called azote, by ascertaining the many subtile particles mechanically suspended in it, and the many gaseous effluvia with which it must be mixed, since from such an analysis some new light might possibly emanate. If we also endeavoured to note in conjunction, more narrowly than has yet been done, the fluctuations and influence of the winds, the air's range of temperature and density, its comparative dryness or

moisture, with the electric conditions both of the earth and atmosphere where epidemical diseases rage, perhaps we might at last penetrate into some of the secrets of that dominion which the elements exercise over us, and might even be enabled to narrow its influence; as from having ascertained the state of things, under which intermittent and remittent fevers arise, we have lessened their frequency by the draining of marsh land, and even considerably limited the extent of various contagions by having ascertained, that their activity depended upon certain circumstances of concentration, and that they might be rendered innoxious by ample dilution with fresh air. Some able authors, however, seem to me to simplify the subject of contagion too far when they assert in unqualified terms, that a person can never be infected from the sick but within the distance of a very few feet; for, notwithstanding what happened long since at certain assizes, I have met with some facts which would prove, that contagion can occasionally pass the narrow precinct which has been imposed, and, like marsh effluvium, maintain its power for a time in a partial current of wind. Happily for the world contagious diseases cease after a certain period from some unexplained alteration in the air, but unfortunately they seem to leave germs behind them scattered far and wide, which again bring forth their baneful fruits in another and distinct constitution of the atmosphere; and it is only this way, that we can explain the rise and decline of some epidemics

constituting epochs as eventful in the physical, as those marked in the political history of man by the eruptions of war, in which his hopes and his happiness have been alike subject to sudden wreck and desolation.

But from what I have observed of the progress of the present epidemic, I should be disposed to believe, that many an epidemical disease hitherto recorded has not simply consisted of one, but of several affections, especially those epidemics which took place in times of public distress when various exciting and predisposing causes would be brought necessarily into operation. Whatever may have been the case in the past periods, certain it is, however, that what is now called *the* epidemic, which has raged in various places for the last three years, is chiefly composed of typhus, the common continued fever, and a low fever of irritation arising from filth and defective nutriment. During most of this term, great depressions have taken place in manufactures and commerce, and the shock has also been communicated to agriculture; so that much physical and moral suffering has existed among the lower orders of people, whose bodies have thereby been rendered exceedingly susceptible of the influence of all those causes, whether specific or common, which produce febrile affections. From the writings of Dr. Cheyne, Percival, and other men of the sister kingdom, whose labours have lately shed so bright a lustre over medical literature, it would appear, that many of the cases in Ireland were

not referrible to contagion; and the same has not only been the case in England within the sphere of my observation, but the characters of the different febrile affections, already enumerated, have been so distinctly expressed, that they could not be well confounded when compared together at the bed-side, and besides many could be traced to contagion, and many to ordinary causes.* Typhus has been distinguished from the common continued fever as well by the contrast of many of the symptoms before mentioned, as by a more profound and protracted relaxation on the subsidence of the excitement; and as for that fever of irritation principally arising from deficiency of food, cleanliness, and ventilation, it has mostly been ephemeral where the patients were early removed into a pure atmosphere, and where it occurred in habits free from chronic disorders, or latent weaknesses of the internal organs. These three affections here enumerated having been often blended in one general description by medical writers, it would be highly interesting to mark their peculiarities more particularly, and to trace their treatment as it requires to be modified by the constitutions and situations in which they take place, by the nature of their exciting causes, and by the common and proper effects of those causes; but these points I must leave to

* From a mistake, all the cases in the Seventeenth Report of the Fever Institution were put down as typhus, whereas it was intended, that they should have been put under the denominations of typhus and common continued fever.

the investigation of others for the present, and endeavour to prosecute the inquiry of the common continued fever, for the topical affections with which it is liable to be combined, so far from being limited to the brain, have an extensive range of character, like those of typhus.

Whenever fever is ushered in by any thing like a cold stage, local inflammation is the effect of the subsequent excitement, and its seat is mostly determined by the previous state of the organ attacked; so that if several individuals were exposed to the same general shock, the brain might suffer in one, the lungs in another, the stomach in a third, the liver in a fourth, and so on, according to the respective conditions of these parts at the time when the exciting power was applied. The causes before enumerated in the common continued fever are well known, in the varied phenomena which they produce, to lead to inflammations of the viscera; and if we consider the proximity of the brain to the heart, and its abundant supplies of blood, we cannot wonder to find it fully as liable as other viscera to inflammation. Indeed if it were not for provisions in its arterial and venous apparatus it would probably be more liable to inflammation. The carotid arteries, on entering the skull through their canal, suddenly change from the perpendicular, and make an almost horizontal turn inwards. After having left the canal, they again change their course, proceeding upwards and forwards by the sides of the sella turcica, and at the anterior clinoid process, make

a third turn obliquely backwards and upwards. The vertebral arteries are partly tortuous from some of the holes in the cervical vertebræ not being directly opposite; they enter at the foramen magnum somewhat similarly to the carotids at their canal, and form, with their branches, the circle of Willis, where there must be a collision of currents. These circumstances strongly guard the brain from sudden gushes of blood on great increases of the heart's action. But this is not all in the way of precaution. The branches of the arteries are not, as in other organs, at once ramified through the substance of the brain, but distributed minutely through the pia mater, from which as from a protecting medium they are transmitted, in the form of infinitely fine capillaries, into the proper brain; and, as if still more effectually to provide against the chances of pressure, the brain has numerous convolutions, into which the pia mater conveniently dips, and which of course afford considerable space, without disturbing the brain, for certain degrees of vascular distention in that membrane. The venous circulation of the brain is equally curious, for the veins are not, as in other organs, ramified through its substance along with correspondent arteries, but they are gathered into the pia mater as into an intermediate network, from which they convey the venous blood into the sinuses; and the sinuses themselves are really outside the brain, so that the interior of that organ is most remarkably protected from disorders of venous circulation, which literally only take place in the pia mater, or in

the sinuses, where so much room is prepared for temporary disturbances.

One office of the brain appears to consist in the concentration of impressions from the sentient extremities of the nerves, and therefore general shocks are apt to affect some or all of its functions, often in a manner which we are at present wholly incompetent to explain. In modern times, however, no less than four aspiring authors,* have boldly attempted to solve the difficulties with respect both to certain disturbances of the cerebral functions and to fever, by assuming that inflammation of the brain is the cause as well of the former as the latter; but though it would be as reasonable to place the seat and cause of fever solely in any other viscus, yet certainly the brain is often consecutively inflamed, insomuch that sub-acute or acute phrenitis is frequently found to constitute an important part of the common continued fever. What has been called hydrocephalus internus is generally an inflammatory affection of the brain, and as this affection usually occurs, it may be considered a mere symptom or consequence of the common continued fever; but it may also arise in the progress of many other diseases, and hence I have sometimes found fluid

* In 1785, Medical Sketches were published by Richard Pew, in which the doctrine is distinctly laid down, that fever depends upon inflammation of the brain. Many years afterwards, in consequence of the publication of Dr. Clutterbuck's able treatise, Dr. Beddoes made us acquainted, that Plouquet had taught a similar doctrine; and latterly, the enlightened Editor of the Journal of Foreign Medicine and Surgery, has shown us, that this was the avowed opinion of Marcus.

effused into the ventricles of the brain, in measles, in scarlet fever, in typhus, and in hooping-cough. It is a great mistake to suppose, that hydrocephalus internus is confined to children, for I have met with it in patients of all ages, as the result of an inflammatory state of the cerebrum, induced by various causes; but unquestionably this disease happens oftenest in children, because in them inflammation of the brain most frequently does not destroy life until effusion has taken place, whereas in adults inflammation of the brain most frequently does destroy life before effusion takes place. This difference often necessarily modifies the character of the disease as presented in children and adults. Viewing hydrocephalus internus as an inflammatory affection of the brain, it occurs under two varieties, one in which the local irritation is established first in the brain, another in which it is established in the chest, belly,* or even on some external part; and the distant irritation primarily increases the heart's action, which disturbs the circulation of the brain where that organ is at all predisposed to disorder, just as it would disturb the circulation of any other part similarly predisposed. This is the true explanation of most of those diseases, whether chronic or acute, which are technically said to arise from the sympathy of one part with another. If an irrita-

* Dr. Cheyne and Dr. Yeats have shown, in their enlightened productions, how often hydrocephalus internus follows disorders of the abdominal viscera, and other practitioners have published many facts illustrative of the same point.

tion be established, no matter where, sufficient to disturb the heart's action, that disturbance of the heart in its turn implicates the weakest organs by sending unusual quantities of blood to them, by which their circulation becomes disordered. Those physiologists who would wish to persuade us, that the heart is but little under the influence of the nervous system have only to attend to the phenomena of many diseases to be convinced of their error: for no irritation of consequence can long exist without operating on the heart, and as that is the only moving power in the body, every change in the force or frequency of its action must necessarily influence other parts, with which it is so inseparably connected by arteries and veins; and if the circulation of any of those parts had previously or even simultaneously acquired a tendency to disorder by some interruption, distention, or diminution of tone, there the topical disease will be palpably developed, there the circulation, in fine, will be most signally disturbed.

There is, however, one form of hydrocephalus internus which is not inflammatory, and which cannot be explained on the law which has just been laid down in reference to irritation; and as this form of the disease appears to have escaped the observation of those who have expressly written on the subject, it shall be concisely noticed in this place, being connected in fact with the primitive symptoms of fever. The child of an able medical friend became somewhat heavy and indisposed, and as it had formerly had serious

indications of cerebral disease, the father was alarmed lest they should return, and on this account at once applied a few leeches to the temples, and opened the bowels by a brisk purgative. The next night I saw the child, and except that the face was a little pale, the tongue a little white, and the appetite impaired, it appeared tolerably well, the pulse and heat of the skin being nearly natural, and all the great vital regions free from uneasiness. Mild laxatives and an antiphlogistic regimen were enjoined. During the night vomiting came on, and on the following morning early, I received an urgent message to visit the little patient immediately. Not having anticipated any mischief, I was shocked to find the child apparently in the collapse of death. The face and whole surface were as pale and cold as marble, the pulse a mere undulating, small line, the respiration short, weak, and irregular, the eyes fixed in a staring insensibility, and the muscles of the face and fore-arms occasionally convulsed. As the main object then seemed to be to restore the animal heat to a natural state, the child was immersed in a warm bath, afterwards wrapt in warm blankets, while warm diluents were diligently administered, with a very small portion of wine now and then. These means, with light support afterwards, removed the immediate threatenings of death, but the pulse still remained exceedingly oppressed, and the animal heat could not be raised to the natural standard over all the surface. In

this state, a marked squint came on, the pupils grew dilated, and gradual but at last complete deafness and blindness, with an apoplectic oppression, supervened; yet all this time the pulse remained very feeble, and the skin cool, and it was only a short time before death, that re-action was emerged, from the irritation of the wreck previously effected. On examining the body, the viscera of the abdomen and thorax were perfectly sound: about three ounces of very thin serum were found in the lateral ventricles of the brain, without any vestige of inflammation. This was an extremely urgent case, but I have seen others similar in their nature, though less violent in their degree, and in all of them the symptoms of cerebral effusion came on when the skin was cool and the pulse oppressed, the febrile re-action having only appeared a little before death. Infants in arms are sometimes liable to such sudden attacks, when exposed to a chilling atmosphere, and they are then supposed to die from those convulsions which occur as a consequence of the disorder in the brain. The disease here spoken of is strictly one of venous congestion, and the effusion into the ventricles takes place from the capillaries, just as we see in an extremity when the return of venous blood is interrupted by compression. It has lately become the fashion to consider dropsical effusions as the result of inflammation, and certainly they are often connected with that condition; but there is one order of dropsy which arises

from fulness of the venous system, influenced by the heart's action, of which the above case of hydrocephalus internus is an example in point.*

* The heart's action is still one of the most interesting subjects to investigate in physiology and pathology, and as it is intimately concerned in the rationale of the diseases immediately under discussion, I shall advert in this note to some positions which were formerly laid down in my treatise on the Scarlet Fever; though I did not know at the time, that one of them, respecting the power which circulates arterial and venous blood, had been anticipated by Dr. Carson, an ingenious physiologist whose labours have not yet been estimated sufficiently high. 1. The auricles of the heart do probably not contract, like the ventricles, but would rather appear to be designed as reservoirs of blood, in order to keep up a regular supply for the correspondent ventricles; the dilatation of the latter being adequate to draw the blood from the auricles, which, if they had contracted after the manner of the ventricles, would surely have driven the blood into the descending cava on the right side, and into the pulmonary veins on the left. 2. Each ventricle of the heart performs the office of a forcing, and also of a sucking pump. 3. The contraction of each ventricle represents the forcing power by which the blood is driven out of the heart. 4. The dilatation of each ventricle represents what is popularly termed the sucking power by which a vacuum would be formed in each ventricle but for the rushing in of the blood of each auricle from the air's pressure, as there would be a vacuum in a common syphon but for the rushing in of the water from the same cause. 5. The circulation of arterial blood is carried on by the forcing power of each ventricle, indirectly assisted by the arteries; but the arteries themselves *generate* little or no mechanical power, and only expend the power which they had received from the contraction of the ventricle, in forcing by *re-action* the blood forward from the valves of the aorta; as a strained spring in recoiling gives out the power, to any thing attached, that it had received from the force to which it previously yielded. Some experiments were made, by a late physician of splendid talents,* by which it appeared, that the arteries, when laid bare, did not recoil from the stroke of the heart, which is the sole cause of the pulse, in the manner above mentioned; but an artery laid bare is not an artery in a natural state, and from marking that at the wrist and other places in emaciated

* Dr. Parry of Bath, the author of one of the best works on Pathology which has appeared in modern times.

Dropsical effusions may take place from the supply of blood by the arteries being so great that it cannot be duly returned by the veins, and this appears to be the case in those acute instances of hydrocephalus internus, where the heart's action is greatly increased: they may also take place where the sum of secretions by the arterial capillaries is over and above the sum of the absorption by the lymphatics, and this appears to be the case in those acute, sub-acute, or chronic inflammations of the serous membranes which lead to hy-

subjects, I am persuaded that a dilatation and a recoil do actually take place; though both the arteries and the veins seem also to possess, from their proper irritability, the quality of accommodating their capacity to the quantity of their contents. 6. The blood in the veins of the general system and in those of the lungs is circulated by the dilatation of each ventricle, by the pressure of the atmosphere upon the veins, and perhaps by the hydrostatic law of fluids finding their own level, aided by the *vis a tergo* of the heart and arteries. 7. The circulation of lymph and chyle is carried on, not by any species of capillary action or of contractility alone, but, principally, if not entirely, by the dilatation of the right ventricle of the heart, and by the pressure of the atmosphere, as in the case of the venous circulation; for a direct communication is opened between the right ventricle and the thoracic duct, through the connexion of the descending cava with the jugular and sub-clavian veins, where the absorbents terminate, and where they pour their contents into the stream of venous blood, as it proceeds directly to the right ventricle. The common theories respecting the circulation of lymph and chyle are most vague and unsatisfactory, but the law here pointed out will be found competent to account for the phenomena; and where the mechanical structure is obviously fitted for the purpose, should we not rather apply a known principle, than the mere subtilties of abstract speculation? *

* My respected and ingenious friend Mr. John Grimshaw, who is an excellent mechanician, thinks that he shall be able to construct a machine which, in particular, will show how the blood circulates, and how the lymph and chyle are absorbed upon the principles here advanced.

drothorax or ascites; and, lastly, dropsical effusions may take place either from too super-abundant load of blood in the venous system owing to a deficiency of force in the contraction and dilatation of the heart, or from some local obstruction to the free return of the venous blood. The first two species of dropsical effusions, arising from an increased action of the heart, or from a disturbance in the capillaries of secretion, comprehend those forms of dropsy which require evacuations to be removed, the effusion being the effect of an inflammatory condition; but in the last species, the treatment requires to be more varied, for the deficiency of action in the heart may proceed from mere oppression or real exhaustion, and the local obstruction may proceed from some functional or from some organic obstruction. The circulation of the venous blood is carried on by the forcing power of the left ventricle, and by the sucking power of the right ventricle of the heart, which is also the chief if not the sole cause of the circulation in the absorbent system, so that in fact the heart is the moving power of all the fluids which circulate in the body. That the forcing power of the heart extends from the arterial to the venous system appears to me quite obvious; for wherever the heart's action is increased, there the current of blood from a punctured vein is increased, and where the action has been very excessive, I have known the blood come out in jets. If the forcing power of the heart extended thus far, why

it may be asked do not the capillary arteries pulsate, since what is called the pulse is merely the stroke of the heart? That the capillary arteries do not *evidently* pulsate is granted, but the admission is nothing against the main argument. The stroke of the heart in the larger arteries which pulsate operates upon a quantity of fluid tangible by our senses; but the stroke of the heart is so infinitely divided in the capillaries as not to be tangible by any of our senses. If I were to throw a drachm weight against any one with a given force, its impulse would be felt distinctly: but if that drachm were divided into ten thousand parts, and if any of those parts could be thrown with the same force, its impulse would not be perceptible; and a similar mode of reasoning might be applied to the stroke of the heart as compared in the larger and in the capillary arteries. Yet it seems to me, that the forcing power of the heart would alone be incompetent to carry on the circulation of venous blood, and as some moving point would still be wanting for the circulation of lymph and chyle, the dilatation of the right ventricle is admirably calculated, on the admitted principles of mechanics, powerfully to assist the venous circulation; and in fact wherever we find evidences of a defective dilatation of the heart, there we find accumulations of blood in the venous system, and sometimes signs of an interrupted flow of lymph, as in the enlarged glands of the absorbent system, with an effusion of fluid into

the cellular tissue. But if the dilatation of the right ventricle of the heart be the cause of the circulation of venous blood as well as of lymph and chyle, how could the blood and these two fluids rise when the cava descendens and the thoracic duct are tied, so as to cut off all communication with the heart? For the sake of argument, this, an experiment which has been made, shall be admitted as a fact to the fullest extent, and yet it affords no valid objection. It is a law, that a thing once put in motion would go on for ever if every impediment were removed, such as the resistance of surrounding bodies, friction, and the like. It was upon this principle Sir Isaac Newton supposed, that the tides would continue to ebb and flow for some time afterwards, if the moon and the sun were annihilated; and indeed we have a familiar example of the continuance of motion when the first cause had ceased to operate, in the current continuing to flow at the distance of some miles up, while at the same moment it is ebbing at the mouth of the river. The full elucidation however of the above opinions respecting the heart's action would lead me into too long a digression; and I have only alluded to them in order to show that some recent authors have simplified the pathology of dropsy too far; but perhaps at a future opportunity I may resume the subject in all its bearing, at considerable length, for I am certain, that a more minute attention to the venous and lymphatic circulation would open out

many new and interesting views both in regard to physiology and pathology.*

Under its ordinary characters, apoplexy may be regarded as closely allied to those examples of the common continued fever in which the brain is so implicated as to lead to the secondary affection denominated hydrocephalus internus; for in truth apoplexy is only more acute in its nature, and either depends upon venous congestion in which the heart's action is oppressed and the heat irregular, or upon arterial fulness in which the heart's action and the heat are increased. It ought therefore usually to be considered as a variety of febrile disease, the rapid progress of which prevents the common series of symptoms, when it is highly congestive in the one case, or highly excitive in the other; though there are most frequently distinct signs of cerebral disturbance, before that decided and overwhelming shock which nosologists have erroneously set down as the sole indication of apoplexy. That form dependant upon venous congestion is usually ushered in by a degree of chilliness, attended with a pale face, oppressed pulse, general agitation, deep uneasiness in the head, sickness of the stomach, and great loss of muscular power. Again, that form dependant upon arterial fulness, is usually ushered in by fulness and flushing of the face, glaryness

* If the foregoing doctrine be correct, it necessarily follows that the veins absorb, an ancient opinion which some recent experiments have rendered almost certain.

or redness of the eyes, strong bounding pulse, and a hot skin, while the patient is apt to complain of tightness about the throat, and nearly always has deep pain and throbbing in the head, with feebleness of the lower extremities. The apoplexy of venous congestion may arise in spare and lax as well as in gross and plethoric habits, from cold applied to the surface, from too full a meal of indigestible food, from hepatic obstructions, or from some pernicious ingredient having been taken into the stomach. Occasionally I have seen it follow immersion in the cold bath in old or debilitated subjects; and I have reason to believe, that those persons are attacked with this disease who sink in the act of swimming from what is called the cramp. Several instances have come under my care which proceeded from irregularities of diet, and some of them occurred in children, who had been allowed to eat too much fruit with the rind or husks. The apoplexy of arterial fulness may be induced by any cause which impels the blood towards the brain by inordinately exciting the heart; such as strong mental emotions, stimulating drinks or diets, insolation, excessive heat or exercise, or intense study; but it sometimes happens that this species immediately arises out of the former, the appearances of venous congestion giving place to an impetuous excitement of the heart and arteries. Indeed most of those cases of the common continued fever in which the cold stage is followed by a hot stage, and that again by a gradual oppression of the brain at last

amounting to coma, might often be justly denominated protracted examples of apoplexy. But we have so multiplied names in our systems of nosology, as frequently to have lost sight of those natural gradations of symptoms, which mark synocha, synochus, phrenitis, hydrocephalus internus, and apoplexy when simply acute,* to be modifications of the same morbid conditions of the circulation, requiring to be treated on similar principles, as the signs of venous congestion, or of arterial excitement may prevail.

If a considerable number of persons were to sicken after an exposure to a bleak variable atmosphere, or to any other cause which produced chilliness first, the various gradations of venous congestion and of arterial fulness in the brain might be traced among them; but though the brain would be similarly affected in several where the febrile re-action was developed, yet in others topical disease would be seated in the chest or abdomen, sometimes with, and sometimes without an affection of the brain. In all those examples where re-action was thus developed with local disturbances, the disease might be pathologically considered essentially the same, the general excitement termed fever, and the topical disorder termed inflammation being their true and declared pathognomonic signs. Nosologists how-

* Apoplexy sometimes supervenes chronic diseases of the brain, as enteritis sometimes supervenes chronic diseases of the abdomen; and the symptoms which insidiously precede this kind of apoplexy and similar affections of the brain form a very interesting subject of inquiry.

ever have thought differently, and under an order denominated phlegmasiæ, we have many topical disorders arranged, one by one, according to the organ inflamed, while the inflammation of that organ is assumed to be the cause of the fever, which has therefore been called symptomatic. Let us examine this opinion, in order to ascertain when inflammation stands in the relation of a cause, and when of an effect to fever; and this is really the more necessary at present because many ingenious men, overlooking the primary phenomena, have mostly reasoned from symptoms merely consecutive in the series of accession.

What we generally understand by the term fever, is an increase in the action of the heart, accompanied with an evident increase of the animal heat. Now this state may be induced in three ways, namely, first by some general shock occasioning internal accumulations of venous blood, which in their turn rouse the heart into increased action, and finally augment the heat; secondly by some local disturbance or irritation, which, from that known but inexplicable connexion between the nervous and vascular systems, operates on the heart, and thereby increases its action and the animal heat also; and lastly, fever may be induced by some stimulus which at once, from its impression on the nervous system and thence on the heart, raises the pulse and the temperature to an unnatural height.

Most of the fevers of this, and of other climates like our own, arise from some general

shock, which first occasions venous congestion, and that again the arterial excitement which follows. All contagions, marsh effluvia, and the vicissitudes of the weather, mostly act in this way. Hence the first symptoms are a diminution in the action of the heart, and a diminution of the animal heat, or what we call the cold stage: now inflammation does not and cannot exist in this stage, all the phenomena of which are directly opposed to inflammation. Whenever this stage occurs, therefore, inflammation is not and cannot be a cause of the fever—in a word, it is the effect of a subsequent condition now to be noticed. The cold stage could not continue without the destruction of the body, and the hot stage is its natural cure. In the cold stage, the blood has retired from the superficial into the deeper seated veins, and from these again into the grand venous reservoirs of the interior; so that it is especially accumulated about the right side of the heart and its larger vessels, by which its return is impeded, less or more, from all parts of the body. This preternatural accumulation of venous blood disturbs the heart, which is also further oppressed by the deficiency of one of its natural stimulants, one of those powers which keeps it in motion—the animal heat. But as the blood is also a natural excitant of the heart, it generally stimulates that organ into increased action, and hence the hot stage is brought about, that stage in which the fever has a character of simple excitement, or is combined with topical

inflammation. In a fever of simple excitement the blood is so equably distributed throughout the arterial system, that it cannot be strictly said to be super-abundantly accumulated in any part; but in a fever of inflammation, into which that of excitement is liable to pass, the blood is so super-abundantly accumulated in some part as to destroy the balance of the circulation, and materially to disturb the functions of the part thus specially affected. In what have been denominated idiopathic fevers, it often happens that for some time no organ is decidedly inflamed, a circumstance which has probably given rise to their appellation; but in their course some organ is often so insidiously implicated, from the maintenance of the increased action of the heart, that the topical disorder is obscured by the diminution of the general sensibility. In other instances where a cold stage has preceded, the topical inflammation appears very early after the increase of the heart's action, and then it is so prominent a symptom as to have been mistaken by nosologists as the cause of the fever, though it is as truly an effect, in such examples, as any other concomitant of the hot stage; and the seat of that inflammation will be found to be varied either according to some peculiarity in the exciting causes by which certain parts suffer more than the rest, or by the local and latent weaknesses in the subjects attacked, by which the circulation of the brain is disturbed in one, and that of the lungs in another, and so forth, as already intimated.

In the cold, in the primary stage of such affections, when the reduction of the animal heat and the feebleness of the pulse are the characteristic signs, there is sometimes no topical pain, but in other instances it does exist; and that pain is then the result of those venous congestions which are dependant upon the diminution of the heart's action and of the animal heat, and which are combined with a state of the constitution directly opposite to that existing in the disturbance of the arteries known by the name of inflammation. On many occasions, we know from the nature of the exciting cause what parts will suffer, as the throat in the scarlet fever, and the mucous membrane of the nose in the measles, and besides such topical disorders, contagions have a peculiar influence on the whole nervous system, probably from the changes which they induce in the blood. In general, however, we can trace the topical affections to previous weaknesses of the patients, which though they had not amounted to disorders when the circulation flowed with its natural calmness, yet became so when the circulation was agitated, from the blood being there most interrupted in its course. Hence it is that certain habits predispose certain organs to disease, as spirituous potations the stomach and liver, intense study the brain, bad water the bowels, and so on; and hence, too, the influence of hereditary peculiarities of structure, and the liability of organs to a return of the same disease under which they had formerly laboured. The idea which we have of a cause

is, that it is an antecedent, and of an effect, that it is a subsequent; and as in those fevers ushered in by a cold stage, inflammation is not a primary, but a secondary event, of course it follows that it does not stand in the relation of a cause, but of an effect to the fever.

Local irritation induces fever by increasing the heart's action, through the intercourse which exists between that organ and the nervous system. Thus I have known a blow on some external part first create local irritation, and then excite the heart, and this excitement produce, on the principle above explained, inflammation of some internal organ; and thus also I have known internal inflammation to follow the local irritation produced by a surgical operation, a consequence by no means uncommon. Local affections, however, are not always followed by fever in this manner, the fever being partly the result of a general shock accompanied with venous congestion; and that fever in its turn, so far from being symptomatic of inflammation, as is currently supposed, actually produces the inflammation in the part where the injury had been inflicted. For example, if a man on being thrown forcibly from a horse, were to crush his arm, immediately after the accident a general shock of the system would be observable as well as the local injury; and at that time no surgeon could denominate the state of the arm inflammation, neither could he have any pretence for saying that fever existed, since the whole surface would be preternaturally cool, and

the heart's action oppressed. In fact inflammation would only supervene in the arm *after* the heart's action and the animal heat had been increased, or to speak technically *after* the re-action had taken place; the inflammation occurring in the injured part as an effect of the fever, because the circulation in that part had been previously disturbed by the bruise or laceration which it had suffered; in fine, just as a visceral inflammation arises out of fever, from some prior disturbance which we term predisposition, though that disturbance is to a far less amount, than in the external instance adduced for the sake of illustration. When what is called inflammation arises without a preceding excitement, it is generally produced by some irritation, as when a blister is applied to the skin; and this strictly primary species of inflammation, according to its degree, may or may not be accompanied with constitutional disorder, with that increase of the general heat and of the heart's action so frequently mentioned. The inflammation, therefore, may be a simple disturbance in a part as unconnected with fever, or it may be a complicated disturbance in a part as connected with fever; but whether in both cases the local affection be exactly the same yet remains problematical, as it has been considered precisely the same, rather from analogy than from minute observation. It would indeed be important to be informed what state of the vessels it is which constitutes inflammation. From cautiously marking the phenomena of an external inflammation it appears to

me, that three things occur in the vessels implicated directly and indirectly. In the first place, red blood circulates in capillaries which in a healthy condition only conveyed a colourless fluid; in the second, those capillaries which did circulate red blood before, are now preternaturally distended with that red blood; and in the last, the volume of the arteries leading to the part is increased. Why red blood should circulate in capillaries which before conveyed a colourless fluid, why the capillaries which circulate red blood in health should now be preternaturally distended, and why the volume of the arteries leading to the part should be increased, are questions not easily to be answered, even allowing that these conditions really do exist in inflammation. According to my observation, no inflammation occurs without an increase of heat in the part, and this, with redness, is one of the phenomena noticed as the most constant by authors. Now an increase of heat must necessarily expand the fluids contained in the vessels, and this expansion must of course augment the capacity of those vessels, so that they may actually contain more blood than in a natural condition; and the increase of volume in the arteries leading to the affected part may be in some measure explicable on the same principle, though the blood probably accumulates in them from not being freely returned by the veins from that part. The action of one artery I have never known greater than that of another, and what we call increased action is, I suspect, merely in-

creased accumulation, and what we call increased determination is, I also suspect, merely an increased volume of the vessels arising from an impediment to the return of the blood from the quarter to which those vessels lead. Increased secretion, so common an attendant upon inflammation, is no proof of an increased action, is no proof that the arteries of one part re-act more frequently than the arteries of another part. If the capacity were increased, the augmentation of the secretion might be the result of that increase of capacity; as in two tubes of different dimensions most fluid would pass through the larger, if the forcing power connected with both were the same, and in the human body, the heart is that forcing power. One of the ancients made action every thing in oratory, and many of the moderns would seem to make it every thing in pathology, for action, a change of action in the vessels solves every difficulty, by being made as various as the occasion may require. In truth the action of arteries is exceedingly limited, consisting of a correspondence to the action of the heart while they maintain their irritability, and that irritability consisting in a power of accommodating themselves to their contents; but in the numerous changes which inflammation induces in the same and different tissues, no doubt can exist, that the vital functions referrible to the nerves, and the chemical functions referrible to the fluids, co-operate with the functions of the heart and the vessels, which are chiefly mechanical.

The third and last mode in which fever may be induced, is by the direct application of a stimulus not sufficient at once to inflame any particular part, but to excite the heart into increased action, and the heat of the body beyond the common standard; and hence fever may arise, without the intervention of a cold stage, from exposure to an elevated temperature, from the use of ardent spirits, wine, or the like, from strong mental emotions, from rich food, and from excessive exercise. Scarcely a summer has passed over without my having witnessed attacks of this nature from the direct or indirect influence of the sun, and I have seen several at every season of the year from intemperance in drinks and diets; but whatever may be the stimulus applied, the local affections, which are so apt to supervene, may generally be traced to the increased action of the heart operating on local predispositions as already explained, and these predispositions chiefly vary according to climate, habits, and hereditary structure. Concerning the influences of each of these circumstances on the different tissues we have not a sufficiency of data for generalizing the subject of predispositions; yet many interesting particulars are scattered in various places, which if concentrated might reflect much light on this apparently obscure department of pathology. In a most interesting work,* replete with practical information, Mr.

* Observations on the Inflammatory Endemic incidental to strangers in the West Indies from temperate climates, commonly called the Yellow Fever. By Nodes Dickinson, of the College of Surgeons, Staff Surgeon to His Majesty's Forces, &c.

Dickinson has clearly shown, that one form of the yellow fever, which he calls the Inflammatory Endemic, is commonly produced by the direct impression of solar radiation; and however yellowness of the skin may accompany fevers arising in hot countries from marsh effluvium, there can be no question but it is an incidental symptom in them, as well as in the Inflammatory Endemic of Mr. Dickinson, which is manifestly a modification of the common continued fever of this country. As inflammations, whether of the internal or external parts, are so liable to be complicated with fever, in whatever mode it be induced, perhaps a few further remarks respecting their treatment may not be thought superfluous by those who can bear the tedium of some repetition, when its object is more effectually to illustrate the leading points of practice by the exhibition of various facts:—yet in the mean time I trust it has been made clear, that these inflammations, as they usually occur, are not the causes, but the consequences of fever, and that the phlegmasiæ ought not to be classed simply as local affections, but as most frequently the products of the constitutional derangement termed the common continued fever, modified indeed in their characters by the various tissues where they chance to be seated.

EXTERNAL AND INTERNAL

INFLAMMATIONS.

EXTERNAL AND INTERNAL INFLAMMATIONS.

IN the common systems of nosology, and of the practice of physic, no notice has been taken of the sub-acute forms of visceral inflammation, the descriptions relating to the acute and palpable forms. This has always appeared to me a serious omission, which has probably been the occasion of fatal errors. Many young practitioners are only taught by the loss of patients, that inflammations of the viscera may proceed to a mortal termination, without any of the strong and distinct symptoms mentioned in the methodical compilations of the day, as the constant and indispensable indications of such disorders. The doctrine of an acute, a sub-acute, and a chronic inflammation might be extended to numerous affections of the viscera; but as we are only concerned with the two former species in this place, and as I have given some illustrations respecting the last in a recent publication, the few observations about to be made shall be confined to the treatment of the acute and the sub-acute forms of inflammation.

In regard to the treatment of what are called simple inflammations of the viscera, little more will be required, than to show in what their treat-

ment differs from those complicated with the genuine, contagious typhus. The principle difference in the curative plan lies in this—that in common inflammations, depletion may be carried further in the onset, as they are generally more intense than those complicated with typhus; but in both, the same rules are applicable to the advanced stages when universal collapse is approaching; and in both also evacuations may be advantageously employed at a later period in the subacute, than it can possibly be in the acute form. In the beginning of my practice, I used to order about fifteen ounces of blood to be drawn on the accession of any common acute inflammation of the viscera, and the same quantity, two, three, or even four times afterwards, at intervals of six or eight hours each, if the symptoms continued urgent, and the strength of the patient unsubdued. These repeated venesections, together with active purgatives, blisters, and the antiphlogistic regimen, constituted the means on which all my hopes of success were founded. Many cases certainly did well under this the common practice of the time, yet it is only candid to add, that several proved mortal. In investigating the causes of death, by morbid dissections, I discovered that such repeated bleedings sometimes made little or no impressions upon visceral inflammations; and I had previously observed, that venesection in general only succeeded where it had been followed by considerable faintness or by syncope. Reflection upon these facts at length induced me to bleed in the com-

mencement of sthenic disorders, until the patients were about to faint, or until the pulse was rendered very feeble. This method was soon found incomparably superior to the one which had been previously followed, when properly aided by other antiphlogistic measures: and yet on the average, less blood was extracted, because one, two, or at most, three bleedings answered, whereas, under the former mode, the operation had frequently been four or five times repeated.

If it were fair to draw a conclusion from the facts which have come within my observation, I should say, that it is a pretty general error among us, the practitioners of England, to bleed too frequently in the progress of inflammatory affections, and yet without sufficient decision. By drawing blood repeatedly, at long intervals, with regard rather to some precise quantity than to any immediate and particular effect, the strength of the patient is too frequently exhausted, while the inflammation still proceeds unimpeded to its fatal termination. Yet the efficacy of venesection does not depend upon the quantity of blood drawn, but upon the effect produced. However indecisively the major part of us in this country may recommend the lancet, some late authors of note appear to me to have employed it with too daring a hand, as if the whole chance of recovery was in the abstraction of as large a portion of the vital fluid as possible in a given time. It is difficult, nay impossible to form any rule, respecting the quantity of depletion, that shall be applicable to all

the various examples of particular diseases. Two cases of abdominal inflammation lately came under my care, in which the symptoms were nearly alike. The subject of one of them was a robust man, who on the first day of the attack was bled to the amount of twenty-five ounces, which produced syncope, and for a time apparently arrested the inflammation; but it returned on the following day, when about twenty-five additional ounces were drawn, and with the same effect as before. On the third day, however, the symptoms of abdominal inflammation again became urgent, and forty ounces of blood were now taken away, before faintness occurred: but this last bleeding was effectual, and the patient recovered very well, though slowly on account of the very copious depletion. The subject of the other case was a young lady, neither remarkable for strength nor delicacy. Soon after the first attack, eight ounces of blood were taken away, which produced syncope, and a marked remission of all the symptoms; yet on the following morning, there was an obvious return of the abdominal inflammation, for which about eight ounces more were abstracted. This second bleeding caused a long continued faintness, but on recovering from it, the patient expressed herself completely relieved, and from that time rapidly regained her strength and health. Now here were two instances of an equally alarming nature, one of which required ninety ounces of blood to be drawn for its removal, whereas the other only required sixteen. It must therefore

appear evident, that the imposition of any arbitrary measure is not to be relied on in inflammatory diseases, since the practitioner should be guided by the effect, rather than by the amount of the blood abstracted: and surely if we can make a moderate quantity completely effectual, it is all the better, as thereby the strength of the patient will be proportionably saved. Yet, on the other hand, we must not be turned from our purpose by unfounded fears about the danger of decided depletion, in cases of extraordinary severity. Half measures are always to be condemned in the commencement of highly sthenic disorders: if they should even break the force of the inflammation, which is hardly to be expected, they will generally leave a subdued degree of it; and thus indirectly lead to chronic derangements of structure, or to serous effusions, if such membranes as the pleura and peritonæum be affected.

It is not perhaps possible to form a correct and general rule as to the time that venesection ought to be repeated in common inflammations. In those of an acute nature, if the first bleeding should not give a marked relief, the second should not be long delayed. It has been customary with me for some time, to wait half an hour, or even longer, with the patient after the operation, to see its full effect, not only upon the pulse, but upon the local affection and the general habit. If in that short period, I could not perceive a manifest change for the better, I have generally ordered the arm to be re-bound, and permitted

the blood again to flow, until the pulse fluttered beneath the finger, from approaching faintness. And at this second bleeding, when the blood has not issued in a full stream from the orifice first made, I have never hesitated a moment to recommend the opening of another vein, that it might be taken away as rapidly as possible, to induce that temporary collapse of the system, so super-eminently serviceable in all inflammatory diseases. Since I pursued this plan, I have not, upon an average, bled more than twice in the most intense inflammations, nor abstracted, in all, more than about forty ounces of blood, where the case has been under my own management from the beginning. In some instances, however, the quantity has been considerably under, and in others considerably above this average, as may have been perceived in the two already reported. Where faintness or syncope has occurred after its use, moderate bleedings have appeared to me quite as beneficial as large ones followed by one or other of those effects. But where large bleedings have been followed neither by faintness nor syncope, they have not by any means appeared so beneficial as moderate ones producing either of those states. It may perhaps, therefore, be a desideratum to enquire, whether any new mode could be discovered of inducing faintness or syncope by moderate losses of blood, in inflammatory diseases, that the strength of patients might be saved as much as possible. Under the present practice, we are often compelled to draw consi-

derable quantities of blood by the lancet before we can attain our object: but as I have found on numerous trials that faintness can generally be induced by moderate losses of blood from the application of leeches, so I would recommend this practice wherever it is an object to save the strength of the patient; though in all cases of an urgent nature general venesection should be employed first, and the local bleeding afterwards as a decidedly useful auxiliary. It is a common opinion of the vulgar, that the *first bleeding* is always beneficial in inflammations. Now it is well known that most persons faint the first time they are bled; and on this account there may really be some foundation for the truth of this opinion. But what has been said about the efficacy of faintness or syncope in inflammatory diseases, must not be extended to those of a truly congestive nature, in which bleeding should hardly ever be continued until such an effect occur.

The quantity of blood which I have ordered to be taken away at once in ordinary acute inflammations has varied from eight to forty ounces. Yet in common, I have seldom extracted less than sixteen ounces at a time, and very rarely more than thirty. Indeed in nine cases out of ten, which have come under my own eye, faintness or syncope has appeared before the last mentioned quantity has been extracted; but then I have always endeavoured to accelerate one of those effects, by the means specified in the cure of the inflammatory typhus. Some authors, I know,

coolly talk about drawing fifty, or even more ounces of blood at one time. This certainly may be sometimes done in the acute cases of this country, and often in tropical climates, where the excitement of febrile diseases is so impetuous. But, waving all considerations as to its general practicability in this country, such excessive depletion at one time is only justifiable in some extreme cases. On a few particular occasions, I have ventured as far as forty ounces of blood at once, with great advantage to the patient; though I should by no means be partial to this as a general practice. In the course of my experience, I have occasionally observed, that where blood had been so very copiously drawn at one time, it either produced a state of universal collapse, from which the system never rose again,—or was succeeded by indications of violent excitement of the heart and arteries, attended with much nervous irritation. It is also remarkable, that on examining the bodies of some patients who had lost great quantities of blood in this way, I found much congestion in the veins of the brain and liver, with more or less effusion of serum in some of the cavities.* Yet a little reflection will easily explain these appearances. When patients are bled to so excessive an amount, as greatly to im-

* Dr. Seed has recently published, in the first volume of the Medico-Chirugical Journal and Review, some most interesting experiments on excessive blood-letting, the results of which coincide with these observations, and which, independently of that, deserve the highest consideration.

pair the energy of the heart and arteries, the natural balance between the arterial and venous systems cannot be maintained afterwards, and there is consequently a preternatural accumulation of blood in the veins. When bleeding, therefore, is carried beyond a certain point in inflammatory diseases, it may actually occasion a state similar to that which it was intended to remove, though the congestion will be seated in different vessels, and attended with an irretrievable collapse, and sometimes with effusions of serum.

These hints are not thrown out to terrify the medical student or practitioner, but to guard him against those extremes, into which the best and wisest men are sometimes liable to run. The experience of every year, convinces me more and more of the great superiority of promptly applying decided measures in the beginning of acute diseases, instead of wasting the most precious moments in feeble, secondary, and often renewed attempts, which generally end in the disappointment of the physician, and the death of the patient. All the most efficacious means should then be made to bear directly on the disease in a short time, and afterwards the mildest measures should be adopted, that nature may be allowed to renovate chiefly by her own powers. Bleeding general and local is certainly the first in the order of remedies, and purgatives the next. When these have produced their influence, blisters near the part affected, and the speedy saturation of the system by calomel, combined with opium, will

mostly complete the cure. The united or successive impulses of a few powerful agents such as these, will not weaken the patient more than may be absolutely necessary for the reduction of the inflammation, provided they be not carried further than prudence, or the exigency of the case may require. In many instances, it is indisputably as dangerous to push depletion too far, as to stop too short in its employment. There is indeed a line to be observed on all occasions between these two extremes, and that physician will be the most fortunate, who has the discernment and firmness to draw it with a correct and steady hand.

Some practitioners hesitate about bleeding in the very onset of acute visceral inflammations, deceiving themselves with the vain expectation, that such expedients as purging and blistering will finally succeed. And when an alarming increase of the symptoms has awakened them from their delusion, they begin to bleed again and again, till at last exhausted nature sinks as much from an excess of evacuations, as from the original disorder. The loss of many inestimable hours is not to be repaid by such indiscriminate rashness. If the inflammation has advanced far, the tone of the general system will be proportionally subdued, and the medical attendant ought then deliberately to pause as to the measure of depletion; for the life of the fellow creature committed to his trust may entirely depend upon its being exactly suited to all the delicate relations of the case. Under such circumstances, small general bleedings will at all

times be preferable to large ones; and where any thing like a state of collapse may be justly apprehended, local blood-letting and blisters should be preferred. Yet if there be one remedy more calculated than another to repair the ravages made by delay, it is the conjunction of calomel and opium, which will often tend to arrest, if any thing can then arrest, the topical affection. This combination, however, requires to be given with great care at such a crisis. As much calomel ought to be exhibited as will render its speedy influence on the system probable, and as much opium as will restrain it from passing off by the bowels and calm the general irritation. These medicines are not only useful in neglected and protracted inflammations, but also in those cases where depletion may have been carried too far in the first instance, or indeed at any time. They will sometimes bring the system back towards recovery, when it appeared to have lapsed beyond the reach of medical agency.

In common febrile disorders attended by topical inflammations, there are usually three stages similar to those of typhus. The first is marked by a retrocession of blood from the surface, and a consequent congestion internally. This stage, however, is generally of very short duration, and is not in an exact ratio, even as to degree, with the consecutive one of excitement, in which the local pain, quick pulse, and increased heat, are the most conspicuous phenomena. In the acute forms of inflammation, the stage of excitement is

generally of short duration, sometimes terminating in less than twenty-four hours, and seldom exceeding more than three days. Its natural tendency is to produce universal collapse and derangement of structure, which are the most essential parts of the third and last stage, in such affections. It must therefore, be evident, that in all acute inflammations of the viscera, the time is very limited in which decided depletion can either be useful or admissible. This, however, is not the case with those visceral inflammations, which assume the sub-acute character; for in them evacuations may often be employed with advantage, several days after the commencement of the inflammation. The distinction, then, between the acute and sub-acute varieties of the inflammation, must be of very great practical importance; and it is much to be lamented, that it has been disregarded by systematic writers, whose descriptions and directions have great influence over the young and inexperienced members of the profession. But, in addition to what has been previously advanced, it is hoped that the following case and remarks will contribute to elucidate the pathology and cure of sub-acute inflammations of the viscera.

In December, 1814, a married lady, about thirty-seven years of age, had an attack of erysipelas on one leg, extending up to the thigh. It soon yielded to topical bleeding by leeches, to purgatives, and an antiphlogistic regimen, but she remained weak, and being pregnant, an abortion succeeded. Notwithstanding, the patient exerted

herself in getting abroad in the following month, though the weather was often very cold. On the 5th of February, 1815, she complained in walking of an uneasy sensation in the left side of the abdomen, which she described as a sort of dragging pain. Next day this uneasiness extended to both sides, and also round to the back, the urine being passed with considerable difficulty. The symptoms not abating, the family surgeon was consulted on the 7th, who apprehended that there was a tendency to inflammation, and therefore took away ten or twelve ounces of blood from the arm, which greatly relieved the pain in the back, though not the uneasiness of the sides. A calomel bolus was afterwards administered, followed by the sulphate of magnesia, which freely evacuated the bowels, and brought away some scybala. The last mentioned cathartic was repeated on the 8th, and an action still maintained on the bowels; but on account of a disposition to nausea, the effervescent draughts were substituted on the following day, and an opiate given at bed-time. The pulse, which had previously raged from 90 to 120 in the minute, rose on the morning of the 10th to 148, and, the attendant surgeon suspecting some latent mischief, I was for the first time requested to meet him in consultation on the case.

At this period, the fever was considerable, and though the uneasiness in the sides was not acute, yet it remained permanent, and was increased by pressure, motion of the body, or a full inspiration. Twenty-four leeches were applied over the in-

teguments of the parts affected, and a brisk saline purgative exhibited. The patient felt somewhat better from this treatment, and the pulse fell to about 138 in the minute, and became rather softer. But, the pain of the sides continuing, twenty-two ounces of blood were taken from a large orifice, in the morning of the 11th, under an impression that an abdominal inflammation still existed. The blood drawn was much cupped, and covered with a thick buffy coat. Two large blisters were afterwards applied to the sides, beneath the false ribs, and extending backwards towards the loins. The patient suffered greatly from the blisters, which were removed and dressed on the 12th, at noon, when the pulse was 120 in the minute. She was much distressed with flatulence and retching throughout this day, and had a laxative enema administered, which relieved the bowels. The internal uneasiness of the sides was rather diminished, not being troublesome when the body was perfectly quiescent, but still becoming so on pressure, motion, or deep inspiration. At bed-time, twelve grains of calomel with two of opium were given in the form of a bolus; the first effect of which was distressing, or, as it was termed by the patient, *overwhelming*, and a profuse perspiration occurred during the whole of the night. But, at an early hour of the 13th, the pulse was only 110 in the minute, and she felt tranquil and relieved, declaring that the last dose of medicine seemed to strike at the root of the disorder. The perspiration continued throughout the greater part

of the day. With a view of exciting ptyalism, twelve grains of calomel and three of opium were prescribed in three pills, one of which was exhibited, at intervals of about six hours. She had some hours of sound sleep in the night of the 13th, and felt herself still easy the next morning, when the pulse was 120 in the minute, and ptyalism obviously existed. The succeeding night was more comfortably passed than any during her illness; and from this time the uneasiness entirely left her sides, so that she appeared quite convalescent by the 23rd of the month, though she was subject to spasms in her legs when she attempted to walk.

On the 25th, the patient had some return of pain in one side, which continued unabated the subsequent day, and was then attended with increased heat of the skin, and hard, quick pulse. We were decidedly of opinion, that it was adviseable to bleed again, especially as the strength of the patient had been considerably recruited during her former convalescence. Accordingly about twenty-seven ounces of blood were drawn, the bowels freely evacuated, and another blister applied to the side affected. On the 27th, she considered herself much relieved, and indeed had felt little pain since the bleeding, except in respiring deeply, but she complained of being very weak Laxatives and the antiphlogistic regimen were continued, and she improved in every respect, until the 1st of March, when the pain of the side again returned, with hot skin and frequent pulse.

The warm bath was now tried, but without the least relief. The pain and fever continuing to increase, general venesection seemed once more indispensably necessary, and about twenty-six ounces of blood were abstracted, before a sufficient impression could be made upon the pain and the pulse. Even during the operation, she found herself much relieved, and a warm perspiration broke out after it, which, being encouraged, continued many hours. Dreading lest these repeated attacks of inflammation should leave a tendency to organic disease, in the parts which had been affected, we considered it prudent again to prescribe calomel and opium; and ptyalism was a second time moderately established, by the 3rd of the month, from which time to the 9th, the pulse continued to fall, and the pain entirely subsided. There was, however, some threatening of uneasiness in the abdomen on the 10th, but it readily yielded to the operation of a brisk cathartic. From about the last mentioned period, laxatives and anodynes were alternately administered until the 25th, when the patient was so far recovered as to get into an adjoining room, and soon afterwards was able to ride out in a carriage. On the 21st of April, she was suddenly attacked with an acute pain in the chest, which extended to one of the shoulders, and was increased by a full inspiration. Yet this pain appeared to be entirely spasmodic, for it was greatly relieved by opiates, and soon afterwards wholly subsided, without leaving the least cough, or other symptom of pulmonary disorder. During

the remainder of the year, this lady continued tolerably well, though she was not able to bear much exertion. When she had any sensation of returning pain, which was occasionally the case, she generally had recourse to the compound rhubarb pills, and a moderate dose of the Black Drop,*

* The Black Drop was originally prepared, upwards of a hundred years ago, by Edward Tonstall, a medical practitioner of Bishop's Auckland, in the county of Durham, and one of the Society of Friends. The recipe, passing into the possession of a near relative, John Walton of Shildon, who also prepared that medicine, was found amongst the papers of his brother, the late Edward Walton of Sunderland, and by the permission of my much respected friend Thomas Richardson,* senior, of Bishop's Wearmouth, one of his executors, it is here inserted.

"Take half a pound of opium sliced;—three pints of good verjuice;—one and a half ounce of nutmegs; half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonfuls of yeast. Set the whole in a warm place near the fire for six or eight weeks, then place it in the open air, until it become a syrup: lastly, decant, filter, and bottle it up, adding a little sugar to each bottle."

The above ingredients, agreeably to the experiment of a scientific friend, ought to yield, when properly made, about two pints of the strained liquor; one drop of which he calculated to be equal to three drops of the tincture of opium, prepared according to the London Pharmacopœia, and the effects of its exhibition also tended to shew, that this was perhaps as accurate an estimate as could be made. Probably this compound might be equally well prepared, by a simpler process; and perhaps some other vegetable acid and aromatic might answer as good a purpose as the verjuice and nutmeg. The Black Drop is a most excellent preparation of opium, and highly deserving of a place in our pharmacopœias. From the quantity of acid in its composition, it will often stay upon the stomach when other preparations will not, and as it also affects the head less than laudanum, in the hands of a judicious physician, may therefore be usefully applied.

* This highly respectable member of the Society of Friends died at an advanced age, since the first edition of this work was published. He possessed the mind of a philosopher, and the heart of a philanthropist.

by which she was almost always quite relieved. She also continued to wear a warm plaster on the right side, which seemed the most liable to the return of pain. For some time she was now and then subject to dyspepsia, from which, and an occasional sallowish tinge of the skin, there appeared to be a tendency to irregularity or obstruction of the biliary secretions. On this account, she was recommended to remove to Harrogate, where she drank the sulphureous water with very good effect, though this did not entirely remove the disposition to bilious attacks. By persevering, however, in a light diet, and occasional laxatives, she in a great degree regained her health, and has since continued pretty well.

This case has been selected for the elucidation of the sub-acute inflammations of the viscera, because it is one of the most interesting of the kind that I have witnessed, and because the highly intelligent husband of the patient kept most accurate notes of its progress, from which the foregoing history has been extracted. It must have been perceived, that this lady had a peculiar tendency to inflammation. She was first attacked by an erysipelas, an affection which I have frequently seen followed by some inflammation of the internal parts. She had not recovered from the shock which this gave to her strength, when an abortion took place. The hemorrhage which accompanied this event, appears to have left the circulation in that vacillating, variable state, which not only always succeeds large losses of blood, but which

powerfully predisposes to inflammation. In this state she was frequently exposed to a cold and changeful atmosphere, which was the exciting cause of the first attack of abdominal inflammation. When the system is weakened from any cause, but especially from loss of blood, exposure to cold readily occasions congestions about the viscera, which in their turn bring on local inflammation and general reaction of the heart and arteries. In the case under consideration, the inflammation was at first perhaps seated in the kidneys, and probably afterwards extended itself to the liver. For more than two days it was marked by little else than uneasiness or pain; but, as the nerves are in some degree the sentinels of life, that warn us of existing or approaching danger, whenever pain or uneasiness continues permanent, even for a few hours, some latent mischief may always be confidently apprehended. When the family surgeon was consulted, with great propriety he had recourse to immediate venesection, and without delay freely evacuated the bowels. This treatment gave some immediate relief; but, in defiance of a brisk purgative, which was afterwards exhibited, the disease advanced insidiously; and in four days more, the pulse rose to 148 in the minute, though the pain was not then very urgent. The local bleeding and purgatives recommended at my instance did not afford much relief, and there seemed then a necessity for the most decisive measures, to save the life of the patient. One full bleeding from the arm, followed up by blisters,

calomel, and opium, produced the most signal benefit; and it is worthy of particular attention, that the lady herself considered the ultimate effect of the large dose of calomel and opium peculiarly serviceable. These measures, together with the ptyalism afterwards excited, restored her to a state of convalescence. The comparatively slow progress of the sub-acute inflammation is well revealed in this attack, for had it been of the acute form, the second bleeding would have been inadmissible, instead of beneficial; nay, in all probability, the case would have been fatal before the sixth day, on which it was employed. It deserves, however, to be pointedly stated, especially as the fact has been omitted in the previous detail, that this lady had a degree of uneasiness in the left side, so early as the 3d of February, two days before she felt that dragging sort of pain, which appeared to mark the developement of the sub-acute inflammation. In this instance, therefore, the disease had fully existed three days at least before medical assistance was obtained, a loss of time which is always greatly to be lamented on such occasions; for when a morbid action has been so completely established, it can seldom be at once subdued, and often renders the case more protracted, if not more dangerous than it otherwise would have been.

The second attack of inflammation occurred twenty days after the first, and as it seemed to arise from too stimulating a diet, I had to regret not having sufficiently warned the patient against

committing so perilous a mistake. In all inflammations of the viscera, but particularly in those of the sub-acute kind, the diet should be of the most cooling description, long after convalescence has been established: otherwise the topical affection will most probably be reproduced, as actually happened in the case before us. This second attack was more obstinate than the first, and of course required more copious depletion for its removal. From the 7th of February to the 1st of March, the patient lost, by general and local bleeding, upwards of ninety ounces of blood, by far the largest quantity which I ever knew drawn in any case of sub-acute inflammation. This lady considered, that venesection and opium were the means, under Providence, to which she principally owed her recovery, and was most sensible of the benefit of the last bleeding. From the long continuance of a quick pulse, and occasional returns of uneasiness in the side, it appeared suspicious whether there was not a threatening of slow organic disease, which is far more liable to follow the sub-acute than the acute form of inflammation. It was partly with a view of guarding against such an occurrence, that ptyalism was induced the second time, mercury being one of the best preventives of structural derangements. In almost all the slight returns of pain which this lady experienced during her final convalescence, she found the most decided benefit from opium, which perhaps has greater powers in preventing inflammation, than has hitherto been acknow-

ledged. There are many inflammatory affections occasioned by the continued irritation of pain, which might often be prevented by an early and judicious administration of opium. Surgeons seem to know the use of this medicine much better than physicians; for by freely using it after operations causing excessive pain, they often succeed in warding off serious inflammations.

Acute visceral inflammations sometimes arise from organic diseases; and when this combination occurs, it may often be discovered by tracing the history of the case back for some time, and carefully comparing the past symptoms with the present appearances. The acute attack will generally be preceded by loss of flesh, and some internal uneasiness. But the following examples of this kind may not be wholly useless to young practitioners.

An elderly and married lady had been afflicted several years with what were deemed nervous complaints. She was extremely liable to dyspepsia, was frequently attacked with violent spasms of the bowels, and gradually lost her appetite, flesh, and spirits. When she came under my care, she was considerably emaciated, and had that sallow, faded hue of the face and skin, which is so characteristic of organic affections. She complained of a constant uneasiness in the abdomen, and had occasionally violent pains there for a few minutes. Her pulse was rather quick, her tongue white, and her skin somewhat above the natural temperature. As the bowels were re-

ported to be in a constipated state, I ordered a mild purgative, which however failed to operate, and not only greatly increased the spasms of the intestines, but brought on a distressing sickness. The irritation having been allayed by opiates, another purgative was ventured upon, but it produced the same effects as before; and the lady began to complain of a violent, *bearing-down* pain near the navel, as if, she said, there was some resistance in that part to the passage of the feces. Opiates again allayed the distressing symptoms, and on the following day some liquid stool was passed, in which there were small portions of extremely flattened scybala, as if they had been forced through a very contracted aperture. These appearances of the feces, together with the rest of the symptoms, led me to conclude, that there really was a stricture in some part of the intestines. From this time I determined to pursue the palliative plan. But in a short period the patient became considerably worse, and at length had a most decided attack of enteritis. The only chance of protracting life seemed now to be in moderate, but decided depletion. The patient was therefore bled from the arm till faintness supervened; and this expedient afforded great and immediate relief. The blood drawn was extremely cupped, and covered with the inflammatory crust. Although the bleeding reduced the violence of the inflammation, yet it was obvious from the soreness of the integuments of the belly, the quick pulse, hot skin, and irri-

table state of the stomach, that some degree of increased action still existed in the bowels. On this account several leeches were put over the surface of the abdomen, and a blister afterwards applied. It was in vain to exhibit other powerful auxiliaries, since nothing but opiates would remain upon the stomach. For some days, however, there seemed a suspension of the inflammation, yet a general collapse gradually came on, under which she at last tranquilly expired. On examining the abdomen after death, the peritonæum and the large as well as small intestines were found considerably inflamed, and thickened in some places. Not far distant from the caput coli, a large tumour was discovered attached to the villous coat, which as nearly as possible blocked up the canal. Both above and below it, the gut was much contracted, and somewhat firmer than natural. This tumour had doubtless been the gradual growth of many years, and, by impeding the descent of the feces, had occasioned all the pain which the patient endured, and finally induced the inflammation which proved mortal. Yet all cases of visceral inflammation, combined with organic disease, are not necessarily fatal, as the annexed will clearly demonstrate.

A married woman, advanced beyond her fortieth year, had been a long time under my care, for chronic enlargement of the liver, and apparently of the right ovarium. At one time, there was an indistinct fluctuation in the abdomen, with other dropsical symptoms; but a regular course of ca-

lomel and squill not only removed these, but improved the general health of the patient, though it did not remove the enlargement of the parts specified. She was attacked with a cutaneous eruption resembling the nettle-rash, but except from the troublesome itching which it caused, she conceived that it was very serviceable to her, having had less internal uneasiness since its appearance. The rash receded on exposure to cold, and soon afterwards she was afflicted with pain in the abdominal tumours, which in about two days became extremely severe, and was attended with universal soreness of the belly, and a high fever. The abdominal inflammation now being the most pressing and dangerous symptom, she was bled till she fainted, the bowels were repeatedly opened by full doses of calomel and jalap, and a large blister applied over the abdomen. These means were very useful, yet as some signs of inflammation still existed, calomel and opium were freely administered until the mouth became affected, and from that period she recovered rapidly. This patient had a second and similar attack, which was removed by the same means; but during its continuance, she passed an extraordinary quantity of morbid bile, and was persuaded, that *something*, as she termed it, had burst within her liver, as the tumour in the side from that time was considerably diminished. Since the last illness, she certainly had better health than for some years before, although the evidences of the organic affections were still apparent. The rash returned

after each of those attacks; and it has doubtless contributed to arrest the progress of those internal derangements, which at some future period will, in all probability, prove fatal to her. Yet, notwithstanding the inflammation was twice arrested in this case, whenever there is reason to suspect that visceral inflammation is complicated with organic disease, the prognosis should always be most guardedly given; because, in general, patients either immediately sink under the acute disorder, or soon afterwards fall victims to the chronic one. Nothing marks organic disease so well as a continued and progressive course, with loss of flesh and colour, and some quickness of pulse. Whenever patients do not recover as usual after attacks of acute inflammation of the viscera, the most minute investigations ought to be made lest a chronic should have insidiously supervened the acute inflammation; and as such an occurrence may be frequently traced to the too early use of generous drinks or diets, or to an exposure to a cold and variable atmosphere while yet in a state of weakness, so these should be studiously avoided by patients convalescent from inflammations of the viscera.

Now and then some mechanical obstruction is the cause of inflammation in the bowels, and when that is the case very large injections, thrown up with considerable force, are often of the greatest benefit; but if the obstruction be seated above the valve of the colon, they will fail to remove it, when they cannot be forced beyond that

valve, as happened in the following instance. A lady was attacked with symptoms of enteritis attended with a twisting sensation always referred to the same region of the abdomen. All the ordinary measures failed to give relief, and only scanty evacuations were procured of a light clay-colour. Throughout the disease she had vomited bile, but towards its close she rejected much stercoraceous matter by the stomach, which was of a deep yellow; and contrasting this with what had been passed by the rectum, it seemed pretty evident that a fixed obstruction existed somewhere in the intestines. Large injections, among various other measures, were tried, but every thing was ineffectual. On examining the body after death, a rough gall-stone,* about the size of a common walnut, was found imbedded in the villous coat of the bowels, nearly six inches above the valve of the colon. Part of the villous coat forming its bed was eroded, and a surrounding portion of the gut approaching to gangrene, while most of the intestine above was much inflamed, and all beneath natural. It is remarkable that this stone had passed the gall and common duct without rupturing either, and yet stuck in the bowel. The latter had probably been irritated by its pressure, and by contracting upon it, had fixed it too firmly to be removed. Another gall-stone nearly of a similar size was found at the top of the duct,

* This stone is in the possession of an esteemed friend, who attended the case with another physician, and myself.

as if it had been about to descend.—Most of the accounts which we possess relative to enteritis are connected with inflammation of its peritoneal covering, but the villous coat is frequently involved at the same time; and when the inflammation exists to any extent in the latter separately, it constitutes the disease usually denominated dysentery, to which some allusions shall now be made.

DYSENTERY.

The cases of dysentery which I have seen mostly originated from the influence of the weather acting on the skin and thence on the abdominal organs, but I have never known any of these to propagate themselves by an inherent principle of contagion, like the genuine typhus. Dysentery, under its very mildest aspect, has a resemblance and relation to diarrhœa where no positive inflammation exists; nevertheless, in all its more distinct and unequivocal forms, it is connected with inflammation or congestion. In the consideration of dysentery, as of every other febrile disease, the progress and tendency of the symptoms should be most assiduously noted at short intervals; because even when there are no indications of inflammation in the beginning, it may become rapidly or gradually developed during the advancement of the excitement.

The inflammation which is so liable to accompany dysentery is either of the sub-acute or of the acute kind as in typhus, and agreeably to my

researches it is seated, for the most part, chiefly in the villous coat of the intestines, and in the liver. Dysentery generally runs a mortal course, if left to itself, within ten days, when the concomitant inflammation is of the acute kind, but when of the sub-acute kind it is considerably more protracted, and often assumes a chronic character, with signs of ulceration in the intestines. Though the sub-acute kind of inflammation commonly appears soon after the occurrence of the general excitement, yet it sometimes arises, at a late period, out of the mildest forms, a circumstance which does not so often obtain with the acute kind, as it most frequently occurs where the symptoms are strongly marked from the commencement. Yet in forms of dysentery apparently the mildest at their onset, an insidious inflammation may begin and proceed, especially in the villous coat of the bowels, with little or no *permanent* uneasiness; and therefore the greatest attention is requisite to unmask such secret attacks, and to prevent them from undermining the vital works within. If there be, in any case of dysentery, a great desire for cold drinks, attended with a sense of heat in the belly, nausea, flatulence, short breathing, and quick pulse, inflammation may be confidently suspected, even though all the other pathognomonic symptoms of abdominal inflammation should be absent.

When a marked stage of oppression, with a cool or cold skin, ushers in dysentery, an acute or sub-acute inflammation of some abdominal viscus will

mostly be developed by the general excitement which follows that stage; and in fact the degree of the inflammation then developed seems to be proportionate to the degree of the general excitement, inasmuch as if the latter run high, the inflammation will be acute, and if it be more moderate, the inflammation will be sub-acute. This pathological view makes the concomitant inflammation rather an effect of the general excitement, than the original cause of the dysentery, and a strict survey of facts will verify this opinion: for in the first stage of oppression when the surface is cool, so far from there ever being any unquestionable sign of inflammation, a diminution of arterial tone exists every where; and the substantial evidences of inflammation only emerge with the excitement of the heart and arteries, which succeeds the first stage of oppression. If it should be asked why in dysentery the force of the general excitement should be spent or concentrated upon some of the abdominal organs, it may be answered, because those organs were more predisposed to disease than others before the attack. Indeed in many cases, this predisposition can be satisfactorily ascertained, from the influence of damp ground, of bad water, and of unwholesome food; so that the abdominal organs having been once rendered susceptible, when any general shock occurs, the principal effects of that shock will be seated in the weakest parts. If any topical affections should exist in the first obscure stage of dysentery, they are denoted by a deficiency of

heat, and by an oppressed state of the heart and arteries; and therefore they cannot be fairly called inflammatory, for they are strictly venous congestions, and are removed by that increased action of the heart which generally follows them, and which produces both the constitutional fever and the topical inflammations.

All the cases of true dysentery which I have attended, originated from the influence of cold, under whatever form applied to the body. The first effect of this influence was an abstraction of caloric from the skin, and a consequent recoil of blood from the superficial vessels: an accumulation of blood succeeded in the internal veins, by which the heart was finally roused into a preternatural action; and in this manner the train of morbid phenomena generally proceeded, until the disease was completely established, or until the indications of an acute or of a sub-acute inflammation became apparent.

If to the symptoms, already enumerated in the abdominal inflammations of typhus, be superadded the frequent slimy, bloody discharges by stool, the griping, and the tenesmus, we may have a tolerably correct notion of the severer forms of dysentery; except that as the villous coat of the intestines and the liver are the parts most liable to be inflamed, we must never fail to look to them for some of the chief peculiarities in the characters of this disease, when it has once been fully developed. And as inflammation both of the liver and of the villous coat of the intes-

tines may be most obscure in their onset and advancement, so practitioners should always be upon the watch in every case of dysentery; because with whatever appearances of debility this affection may be accompanied, dissection will always shew, that abdominal inflammation or congestion was directly or indirectly the cause of death. It occasionally happens in dysentery, as in typhus, that death takes place before the excitement has had time to emerge; and in such cases, considerable congestions are found after death about the internal organs, but particularly in the veins of the liver. Again, in other cases of dysentery, the fever puts on a distinctly remittent type, or it has a resemblance to the irregular forms of the congestive typhus; and in both examples of this description, an accurate inquiry will detect some degree of venous congestion about the liver or spleen, with a variable state of the surface. The more the pathology of febrile diseases is investigated, the more plainly will it appear, that the leading effects on the great viscera are few and uniform, how various soever may be the external phenomena and the primary causes; and in conducting the treatment, these effects must always be strictly regarded from the first to the last, otherwise we shall be left without any fixed principles to guide us to successful results of practice.

There can be no doubt that dysentery may be cured by very different methods—by bleeding and purging, by mercurials and opium, or simply by a conjunction of cathartics with sudorifics; and the

reason of this will, in some measure, be manifest from what has just been said, since the disease has a variety of character which admits of a variety of treatment. But amidst the numerous plans which have been recommended, it is desirable to know those upon which most confidence may be placed, not only in the mild but likewise in the severe modifications of dysentery. The slightest attacks of dysentery have a close affinity to an ordinary diarrhœa, and as they may become aggravated to a dangerous degree from neglect or delay, they ought always to be attended to at the very beginning. Even in such attacks, there are three parts which claim an especial consideration, the lining of the intestines, the liver, and the skin; for no case of dysentery perhaps exists, however simple, in which the functions of these parts do not in some way participate. A few doses of calomel and castor oil will generally restore both the villous coat of the intestines and the liver to a natural condition; but the warm bath, and the occasional exhibition of the compound powder of ipecacuan will greatly expedite the cure, by allaying irritation and by inducing a general perspiration. In the commencement of all febrile diseases when the skin is cool or of an irregular heat, the warm bath has generally an excellent effect in contributing to equalize the circulation; and this simple expedient, together with the employment of purgatives and sudorifics, will often at once arrest the symptoms, or at least, by diminishing

the venous congestions which then exist, will make the subsequent stage of excitement much milder than it would otherwise have been. Men who have practised in the navy and army must be fully aware of the great advantages which result from having patients immediately under command at the first attack of febrile diseases; and it is truly surprising to find how readily such diseases in general yield, at that early period, to the aplication of those measures which lessen internal accumulations of blood. In most threatenings of dysentery where appearances indicate venous congestions in the first stage, the lancet should usually be used without hesitation, when the heat has been equalized by the warm bath; for if those venous congestions should not be speedily removed, they will give rise to an impetuous excitement, or endanger the structure of the part principally affected. But in most examples of this nature, where venesection is early required, a dose of calomel and opium ought to be administered after the operation: and if tepid diluents be given at the same time, this dose will commonly excite an universal perspiration, the effect of which is often strikingly efficacious; so that little more is sometimes necessary afterwards, than to keep the bowels soluble by moderate doses of cold-drawn castor oil.

When fully developed with fever, dysentery is attended, under all its severer forms, with an acute, or a sub-acute inflammation of the villous coat of

the intestines, and generally with an inflammatory or engorged state of the liver. If the inflammation of the villous coat of the intestines be of the sub-acute kind, and the affection of the liver similar, daily purging by calomel and castor oil, with occasional anodynes and the warm bath, may certainly accomplish the cure in many cases, provided these remedies be opportunely adopted. Yet even in such instances, it is invariably much better to bleed moderately at the beginning, and, the bowels having been freely evacuated, to produce ptyalism as rapidly as possible by the administration of calomel, with small portions of opium. It may be said, there are some records to shew that dysentery has often been cured without venesection, and the assertion cannot be denied; but this only proves, that diseases may be arrested by different measures, and the grand question is, what measures are most safe and efficacious in the general run of practice. If my observation be correct, early and sometimes repeated venesection at once diminishes the force of the abdominal affections, renders the system much more susceptible of the action of purgatives and mercury, and not only shortens the duration of the disease, but lessens greatly the chances of chronic affections supervening the primary disorders in the abdomen. This even obtains in dysentery combined with the lowest degrees of inflammation, and those forms combined with an acute inflammation, absolutely require decided blood-letting from the first attack; as they are generally so rapid in their progress,

that there is no remedy, with which we are at present acquainted, can operate so speedily as venesection in checking the inflammatory action. Whenever there is much irritability of the stomach in dysentery, it is a certain sign, that some of the abdominal organs are overloaded with blood, and venesection is then particularly indicated; indeed in every case of a threatening aspect, an impression must be made by the lancet soon after the attack, otherwise they will most frequently prove fatal in a short time, or finally assume a chronic character.

Bleeding was used in dysentery by Alexander of Thralles, whose opinions and practices in many respects resemble those of the present times; since he not only bled in many ardent fevers, but was a strenuous contender for purgative medicines, the efficacy of which is now so well established. Sydenham was a great advocate for blood-letting in this disease, and Sir John Pringle frequently employed it in the dysenteries which appeared in the armies to which he was attached; and since the publication of the first edition of this work, Dr. Somers has shown the utility of this practice, from an extensive observation among the armies which served in the peninsular war. This practice, however, is not yet so highly valued as it ought to be in dysentery, by practitioners in general; and it will be most gratifying to me, if these desultory remarks in its favour should tend to make it more frequently adopted. Only let bleeding be once fairly introduced, in the beginning of the severer

modifications of dysentery, and there will be fewer fatal as well as chronic cases; for many violent cases of this disease are fatal for want of some measure capable of making a great and an immediate impression, and others become protracted from the inflammation having been lessened, instead of completely removed, in the first instance. But before quitting the subject of general venesection, I must caution the practitioner to be prompt and decisive in its use at the onset, and most circumspect when the disease has continued for some time. In the beginning of urgent instances of dysentery, the strength of the system is overpowered, not really exhausted; and one or two bleedings, carried so far as unequivocally to make the pulse a mere flutter beneath the finger, will generally be very beneficial. It is still a common practice to bleed repeatedly in inflammatory diseases, day after day; but so far as I have remarked, the second bleeding should promptly follow the first, where the first has not given the intended relief. And if this method be pursued, with the means hereafter to be mentioned, repeated blood-lettings will seldom be necessary, even in the early stages of dysentery, and of similar affections. As for the protracted cases of dysentery, the bleedings should always be small, whenever they are deemed requisite at that period; for the continued irritation of the disease has then so reduced the strength, as to render all powerful applications doubtful and even dangerous.

It is perhaps one of the most remarkable defects

in the practice of most men who have distinguished themselves in physic, that they rely far too much upon one remedy, or upon one plan of treatment. By limiting ourselves to one remedy or to one plan of treatment, we are in great danger of leaving unemployed agents which are really serviceable; and as we ought to be careful not to confine our pathology within some narrow and favourite limit, so we ought also to endeavour to make our therapeutics comprehend, not one measure only, but all those measures, the conjoint operation of which is more salutary, than the operation of any of them singly used. It were easy to show from the history of medicine, that too much reliance has frequently been placed on blood-letting, to the exclusion of other expedients of great power. Even if the illustrious Sydenham, equal to Hippocrates as a practical observer, had employed purgatives more freely with the lancet, there cannot be a doubt, that the results of his experience would have been far more favourable; but as in deviating from the prejudices of his own times, he had to create a practice for himself, it is pleasing to reflect how much his genius anticipated of a future age, how far he sprang before his persecuting co-temporaries.

Though general bleeding, in my opinion, is incomparably the best first remedy in the more violent forms of dysentery, yet there are other auxiliaries which should be brought promptly into action, but particularly purgatives, with calomel and opium. The most intense attacks of dysen-

tery may be cured by the decisive employment of bleeding and purging at the beginning; and the same might be asserted of the bold administration of calomel, combined with opium and sudorifics. But in estimating the powers of any one mode of treatment we should endeavour to trace it through its general consequences, before we venture to give a final opinion; and if we find that there are some instances in which it fails, and that others of a precisely similar character prove remediable by the combination of another mode, we surely ought not to hesitate in making the addition in our future experience. Now though bleeding and purging alone may cure dysentery, and though calomel and opium may have the same effect, yet a conjunction of these measures will be more efficacious in the main, than either administered alone; and as we judge in medicine of the expediency of any thing from its general rather than from its particular effects, so we have the strongest grounds for preferring the united agency of these means to their separate agency. As soon, therefore, as a sufficient quantity of blood has been drawn, a scruple of calomel ought to be given, with about two grains of opium. However it may contradict our preconceptions, very full doses of calomel generally produce in fever less irritation than small ones, and indeed when combined with opium, so far from creating, commonly allay irritation, and also act powerfully on the skin. About two or three hours after the exhibition of the calomel and opium, small doses of the sulphate of

magnesia should be repeatedly prescribed until copious stools be procured; and where the stomach continues irritable a little calcined magnesia may be added to each dose of the sulphate, a compound which often remains better upon the stomach than any other. The bowels having been thoroughly evacuated, calomel should be boldly administered, in urgent examples, with small doses of opium or of the compound powder of ipecacuan, and continued afterwards at proper intervals, that its specific effects may be established as speedily as possible; and where the belly is not regularly moved under the use of the calomel, either the sulphate of magnesia or castor oil may be given as occasion may require, since these are unquestionably the best purgatives in dysentery, but especially castor oil. When the mouth is once obviously affected by the calomel, prudence requires, that it should be withdrawn, or only prescribed in small quantities: but until recovery be completely insured, an action must be daily maintained upon the bowels; and yet this action must be moderate when the bowels have been once thoroughly opened, and ought not to be continued long when the stools become perfectly natural. By purgatives having been pushed too far in the advanced stages of dysentery, I have seen some patients apparently lost; and practitioners, therefore, should make a point not only of examining the stools daily, but of proportioning the evacuations to the stength of their patients. This is especially requisite in the present times, when the

use of purgative medicines is in full force; for however excellent they may be in the outset and advancement of acute diseases, much caution is required in their exhibition when those diseases have begun to decline.

The medical public, I conceive, is greatly indebted to Dr. James Johnson,* an accurate observer of nature, for having so clearly illustrated the connexion between dysentery and the deranged functions of the liver and of the skin; and also for having demonstrated the great efficacy of scruple doses of calomel, combined with small portions of opium. The proper combination of these two medicines has a surprising effect in restoring the natural balance of the circulation, and in promoting a free secretion of bile and of perspiration. When it fails, however, in acting forcibly on the skin in dysentery, which will rarely be the case, small doses of pulvis antimonialis and camphor, or of ipecacuanha, may often be added with considerable advantage; but the warm bath should be occasionally used at the same time, more effectually to equalize the vascular system, and to induce a flow of blood to the skin. Even a flannel bandage applied over the abdomen will not unfrequently give some relief to the tormina and tenesmus, on this principle; and we cannot be surprised at the effect, when we see slight inflammatory affections of the fauces alleviated by wrapping a little flannel round the throat. Since

* The author of the highly valuable work on the Influence of Tropical Climates. London: Printed for J. J. Stockdale, 1813.

the publication of the first edition of these Illustrations, a protracted case of dysentery came under my care, in which the patient was exceedingly exhausted, and almost constantly harassed by small ineffectual discharges of blood and slime, attended with considerable tormina. The tongue was foul, the stomach flatulent and irritable, the pulse very small and quick, the patient lay upon her back with her feet drawn upwards, and she had a very troublesome hiccup. There was considerable tenderness over the region of the liver, but she could bear pressure without much uneasiness over the lower part of the belly, which seemed to be sunk or drawn inwards, as is sometimes very observable in bad cases of dysentery. Besides this unfavourable conjunction of symptoms, the stools were occasionally of a very black colour, which is always an untoward circumstance in cases of dysenteric disease. As general blood-letting appeared entirely inadmissible in the case, and as symptoms of inflammation still existed in the liver, I ordered six leeches to be applied over the integuments of the right hypochondrium; and without further delay prescribed fifteen grains of calomel with two grains of opium, and directed that a similar dose of the calomel, with one grain of opium, should be repeated in twelve hours. This treatment lessened the tormina, tenesmus, and hiccup the first day, but the large doses of calomel, with the small proportions of opium, were regularly continued night and morning for four days longer, when a slight ptyalism occurred; and as

from this period the case assumed a favourable aspect, nothing more was directed than a small blister to the right side, occasional doses of castor oil, and a flannel roller round the abdomen.

It was observed in the first impression of these pages, that local bleeding, as well as blistering, had invariably a double influence, a topical and a general one, by the first of which a change is induced on the part, and by the second on the whole vascular system. Since then I have satisfactorily ascertained, that small portions of blood, taken away by leeches from the capillary vessels, have a considerable effect in diminishing the action of the heart. Whenever, therefore, inflammation exists in conjunction with much debility, this method of drawing should be adopted by way of arresting the inflammation, and saving the strength at the same time; but where leeches are employed in urgent and doubtful cases of this nature, a sufficient number ought to be applied, until there be an obvious diminution of the pulse. It is very common for persons to complain of being faint after the application of leeches, even when only a few ounces of blood had been drawn by them; and the action of the heart may be weakened or stopped by a small or moderate quantity of blood thus taken away from the capillaries, when considerably more would be required to produce the same effect, if abstracted from a large vessel. This fact admits of an extensive application in the practice of physic, but it is peculiarly appropriate to those inflammatory cases which

have been so protracted as to induce debility. Nevertheless it must not be forgotten, that in the beginning of inflammatory diseases, the lancet ought not to be superseded by local bleeding, though the latter may be employed as one of the best auxiliaries. In some instances of dysentery, I have ordered several leeches to be put to the integuments of the abdomen, and the result was always satisfactory, when this was timely done, and along with the means before mentioned; but though such a treatment may sometimes tend to arrest or to alleviate the symptoms at an advanced stage, yet calomel and opium must then be relied on more than other remedies. As for blisters, they may be said literally to burn the part to which they are applied, for they appear to operate by accumulating or disengaging caloric; and the discharge of serum which at last takes place is a species of evacuation which may affect the local and the general circulation, though their chief efficacy is perhaps attributable to the principle of counter-irritation. In the earlier stages of dysentery, blisters are sometimes very advantageous, particularly when put to the region of the liver, after the use of depletion: but where the stools are extremely frequent, blisters create an external inflammation which often proves extremely troublesome to patients; and whenever deemed necessary in the advanced stages, they ought not to be made too large, as they might in that case give rise to a hazardous irritation and exhaustion.

The insufficiency and danger of half-measures

could hardly be more strikingly exemplified, than by pointing out their effects in severe cases of dysentery; for, in the first place, many patients would fall victims to the unresisted rapidity of the disease, and in the second, in many it would assume a chronic character, where its violence had been somewhat moderated. In chronic cases of dysentery, complicated with affections of the liver, and with ulceration of the intestines, I have found nothing so useful as small doses of calomel and opium, or the blue pill with a little opium, and a regular perseverance in the Harrogate sulphureous water so as to keep the bowels soluble by it; but the mercurial preparations should be continued until the mouth be made gently sore, and it ought to be kept in that state for some time, while the patient breathes a fresh atmosphere, and adopts a cool nutritious diet by way of recruiting the strength. When dysentery is complicated with ague, or when it has arisen from marsh effluvium a change of air is often highly useful: but in most cases the ague cannot be cured till the dysentery be removed, and therefore in this, as in other mixed examples of disease, the most urgent symptom must be first subdued.

Since my residence in London some cases of dysentery have come under my care to which the foregoing plan of treatment was not exactly suitable, inasmuch as general bleeding could not be safely used, and the exhibition of calomel required the greatest circumspection. These cases occurred in emaciated subjects when just convales-

cent from a previous fever, and they were marked by a profound prostration of muscular power, and by great general irritation. In them leeching the abdomen was of much service. Cold-drawn castor oil as a purgative during the day, and repeated doses of the compound powder of ipecacuanha during the night answered the best purpose, with a small occasional dose of calomel where the secretions of the liver were vitiated. Thin arrow-root, in small quantities, was the most suitable diet. Wherever much abdominal irritation exists, it will be found a point of the first importance to give little and light food. If dysentery were to attack soldiers while resting in a camp and well-fed, it would bear the active treatment before mentioned: but if it were to attack an army worn out by disasters, retreat, and want of food, much milder measures would be expedient; and it is no doubt to the different circumstances under which the same diseases are liable to appear, that we must attribute part of that discrepancy of opinion which exists respecting their cure. When an acute disease takes place in constitutions previously sound and robust, active measures reduce that disease, and still leave the system possessed of considerable tone: but when an acute disease attacks constitutions broken and enfeebled, the very shock of such active measures would either be immediately fatal, or induce a dangerous exhaustion and irritation; and in the latter instances, therefore, it is always most expedient to combine those moderate means which while they lessen in-

flammation also allay irritation, thus compensating the demands made on a habit tremulously susceptible. No prepossessions for a particular practice should ever be allowed to make us act with the least degree of precipitancy where an acute disease attacks any one wasted by prior sufferings; for in such cases confident boldness is but perilous temerity, whereas a cautious adaptation of remedies to the local disease, as influenced by the general weakness, always affords the fairest chance of success. In these pages I have frequently had occasion to recommend decisive measures, but I trust that the circumstances which authorize those measures have been sufficiently marked to prevent the student from pursuing that indiscriminate kind of practice which is so often set down in systematic compilations under a certain name, as if the character of the disease, and the constitution of the patient were always precisely the same. Having adverted to inflammation of the mucous tissue of the bowels, a few remarks shall next be made on an inflammatory affection seated in a similar membrane, which covers a small but highly important part.

INFLAMMATION OF THE LARYNX.

Many cases have been presented to me, in which the mucous membrane of the trachea or that of the bronchia was acutely or sub-acutely inflamed, bearing more or less of the character of what has been called croup in the one instance, and perip-

neumonia notha in the other, as the inflammation chanced to occupy the trachea or the bronchia exclusively. Where the trachea was inflamed bloodletting general and local has been better sustained and more directly serviceable than where the bronchia alone was attacked; though even in the latter, small or moderate bleeding at an early period often proved useful; but in both advantage resulted from emetics, the warm bath, gentle laxatives, a mild regulated temperature, with bland diluents to promote perspiration, small doses of Dover's powder and of calomel with the pulvis antimonialis.* But I do not wish to advert so particularly to these affections as to that in which the mucous tissue of the larynx itself is the special seat of inflammation. In all I have seen eleven cases of laryngitis, five of which terminated fatally. This is a mortality far greater than I ever witnessed in any other inflammatory disease, yet the report about to be given will, I sincerely hope, enable others to be more fortunate. The first case of laryngitis which I saw did well by early bleeding, an antimonial emetic, and purgatives. In the second, I am confident of speaking within bounds when I assert, that one hundred and sixty ounces of blood had been drawn, before my visit, within the space of six hours, chiefly from

* Mr. Alcock has advertised a work in preparation on disorders of the mucous membrane of the pulmonary organs; and from the talent which he possesses, and from the attention which he has paid to the subject, I doubt not but it will be a valuable contribution to medical literature.

the arm by the lancet, but partly from the throat by leeches. Though this large quantity of blood thus rapidly drawn gave temporary respite to the dyspnœa, and prevented in fact immediate suffocation more than once, yet so far from arresting the inflammation the patient died within twenty-four hours, in despite of antimonials employed towards the close. In the third case, general and local bleeding, with blisters, nauseating doses of antimony, and purgatives all had a fair trial from the beginning, but they availed nothing; and in the fourth and fifth case alterative doses of calomel were added to local bleeding and other ordinary means with no better effect, but the sixth was not seen till the patient was so nearly suffocating, that she expired before a surgeon could obtain an instrument to make an incision into the windpipe.*

* It appears, that the operation of tracheotomy is practised, and probably has been so from time immemorial, among the native Indians. Captain Charles Gold relates, that while he was travelling in 1797, between Madras and St. Thomas's Mount, he met a musical beggar, who at last arrested his attention, by constantly pointing to an orifice in the throat, from which, when the Captain observed it, the man pulled out a plug of tow, and placing a flute to his mouth, seemingly used great exertion to blow it, but without effect; he then put the end of the instrument into the hole in his windpipe, shut his lips close, and played in that manner, with vivacity and apparent ease to himself.

This musical beggar was also seen by other gentlemen of respectability, whom he informed, that he had been a palankeen boy, and that for the cure of a disorder in his throat he consulted the Brahmins, who recommended the operation of perforating the windpipe, both as a penance and remedy for his disease, on which it produced a good effect. See Oriental Drawings between the years 1791 and 1798. By Captain Charles Gold, of the Royal Artillery. Printed by Bunney and Company, and published by G. and W. Nicoll, booksellers to his Majesty, Pall Mall, 1806.

From a review of these six cases, it appeared to me clear, that blood-letting had only been of unequivocal benefit in one of them. Recollecting the utility of an antimonial emetic in the first case, and having observed some alleviation of the symptoms in two where vomiting was excited late, I determined to try emetics fully from the commencement, if similar instances again occurred. Five cases followed, at different intervals, in all of which soon after the first attack the tartarized antimony was given, sometimes combined with ipecacuanha, in repeated doses, till free and frequent vomiting took place. No circumstance in my professional life ever gratified me more, than the great and sudden relief which the vomiting afforded, in reality it removed all the urgent symptoms at the time, and being excited as soon as ever the slightest signs of stricture in the larynx returned, at last completed the recovery. In three of the cases, some huskiness in the voice remained with slight disturbance in the respiration, which induced me to prescribe calomel in small doses about every second hour till the gums became rather tender, with a view to obviate any risk of chronic inflammation that might have possibly remained. But in the other two cases this auxiliary was not employed. In one of these, the patient had only been ill about four hours when the voice was so completely suppressed, that she could only convey her meaning by making signs. She had been largely bled without the least benefit just before I saw her, and though she was then

most obviously threatened with speedy suffocation, an emetic of antimony and ipecacuanha, which continued to operate for nearly three hours, gave her the most perfect relief. Such is sometimes the horrible rapidity of this disease, that one of the fatal cases before-mentioned only lasted about eight hours, and an intelligent friend attended another which terminated in seven hours from its commencement. As I cannot help suspecting, that some instances of inflammation seated below the larynx have been published as cases of pure laryngitis cured by blood-letting and other commonly adopted measures, an account of the symptoms attendant upon this disease may not be unacceptable.

One of the first symptoms of all the cases which I witnessed was soreness in the throat, accompanied with less or more uneasiness in deglutition. This soreness was not confined to the fauces but extended to the larynx which was tender to pressure. On examination the pharynx was always inflamed, and sometimes very considerably. At every expiration and inspiration the larynx had a preternaturally augmented motion, and, when the breath was drawn down strongly, the air seemed to enter impededly as if it had been forced through a very narrow aperture, and a hoarse, dull, hollowish sound was then made. The voice was converted into a sort of thick, obstructed whisper, and in two of the examples, was soon entirely suppressed. But one of the most peculiar and characteristic symptoms was, that

the patients could not cough out in the way that is ordinarily done in tracheal, bronchial, or pulmonic affections. In fact they could not cough out at all, for when requested to do so they made a suffocating sort of attempt, which ended in a low, grumbling, and almost grunting kind of noise in the throat. Occasionally too there was a glutting sound in the fauces, apparently connected with an accumulation of mucus and saliva, and it was now and then followed by moaning rather expressive of subdued suffering than of pain. Nothing was expectorated from the trachea, but the secretion of saliva was increased and ropy, in consequence of which the tongue remained moist. The pulse at the first was mostly quick and small, but occasionally it was observed to be very little disturbed; the face was then pale while the lips retained their natural hue for some time; and the heat of the surface was irregular, being greater than natural on some parts, and less on others. In some instances the countenance at this period was so little changed, and the movement of the chest apparently so easy, that a careless observer might have passed the bed of the patient without suspicion of his perilous disease; but in other instances the countenance was agitated as if from alarm at the very beginning, and the chest heaved up and down with an evident increase of labour. This difference in the expression of the countenance and in the motion of the chest at the outset, seemed to depend upon the difference in the degree of the inflammation in the larynx at that time. As the

inflammation advanced, however, the respiration always grew more and more difficult, till at last death seemed literally to occur from suffocation, most probably occasioned by tumefaction within the larynx and about the epiglottis; as dissection shewed that considerable inflammation had invariably existed there, without any other appearances sufficient to account for the fatal issue of those cases in which the examinations were made. The inflammation may be simply in the larynx and its vicinity, or it may extend down the whole of the trachea and even into the bronchia; but from what I have seen I am inclined to believe, that when the larynx is primarily attacked, the inflammation is generally limited to that part and to the pharynx. Though my own experience in laryngitis is little in favour of those methods which I have seen the most effectual in other inflammations, yet I would not be understood to insinuate, that bleeding may not be beneficial in some cases; but certainly from what I have witnessed I shall in future place my chief reliance upon the early, and, if necessary, the repeated administration of antimonial emetics, and consider other expedients as merely secondary, until a more efficacious mode of treatment shall be discovered. In this formidable malady it will be found of the highest importance to watch over the patients most narrowly even when a signal remission of the symptoms is obtained; for the inflammation is so exceedingly liable to return, that if the emetic should be neglected on the occurrence of each re-

lapse, the danger would probably be so much increased by the delay of a few hours as to render it then ineffectual. In some of the examples in which the emetics were given I staid with the patients in order to ascertain if possible its mode of operation. The first effects which seemed most evident was an increased secretion of mucus from the fauces, and I suspect also from the membrane of the windpipe, the next was repeated and pretty strong attempts at inspiration which really appeared somewhat to relieve the stricture of the larynx, probably favoured by the flow of mucus from the adjacent parts. But the decided relief did not take place till full vomiting supervened, during the whole of which the larynx was much moved by the muscles then in action; and probably this very motion had some effect in changing the condition of the circulation in those minute capillaries which are the seat of the disease. But the vomiting is attended and followed by a pretty copious discharge of mucus from the throat, and as this influence of an emetic perhaps extends throughout the trachea, the fulness of the affected vessels may partly be thus relieved. On keeping my hand upon the pulse before, during, and after the operation of the emetic, I could not perceive that it underwent any very material change; so that in these instances its efficacy could not be referred to its action on the heart.

Since the above pages were composed a case of laryngitis has occurred to me which was fatal, notwithstanding the administration of emetics.

It may, therefore, be useful to enter into some of the particulars. The patient was an old, spare woman who had just recovered from a severe attack of fever, and was very weak when the affection of the throat took place, seemingly from exposure to a current of air, which is one of the most common causes of this disease. Unfortunately the symptoms of laryngitis had existed nearly twenty hours before I saw her. An emetic of antimony and ipecacuanha was immediately prescribed, and it gave her so much relief, that all the most urgent symptoms were suspended for a considerable time; but she began to complain of a deep-seated uneasiness on each side of the throat, and with this the signs of laryngitis returned. The emetic was repeated, some leeches applied over the larynx, and a blister on each side of it extending backwards, while small doses of calomel were ordered about every second hour. Relief was once more procured, though much less decided than before. The uneasiness in the neck remained in a subdued degree, and on the day following an erysipelas appeared on the face, and shortly afterwards one of the arms became very tense and painful. The irritation of these attacks renewed the affection of the larynx, and as the patient was in an exceedingly exhausted state, she soon sunk under this complication of maladies. On dissecting the muscles from the fore part of the larynx and trachea, at about the top of the thyroid gland, an abscess was perceived on each side. That on the right side was nearly an inch in length and half

an inch in breadth, extending length-ways by the larynx. The one on the left side was not quite half the size. These abscesses were situated under the blistered surfaces of the skin, and, had there been none other, perhaps might have been attributed to the influence of the blister, though beneath the muscles. On pursuing the dissection, with a view to remove the larynx and pharynx with their continuations in part, a considerable abscess was found between the muscles of the pharynx and the bodies of the cervical vertebræ. This abscess extended nearly three inches in length and one in width, and did not contain more pus than sufficient to separate its front and back surfaces. The cellular substance surrounding was somewhat thickened, and the vertebræ sound. The whole of the membrane lining the fauces, pharynx, and larynx, was thickened and its surface covered with pus mixed with mucus. The epiglottis was highly red at its under part and slightly so at its upper. The follicles of the tonsils contained purulent matter, and one of the right side was considerably distended. If this case had been seen earlier possibly it might have ended favourably, though in patients weakened by a previous illness the supervention of any inflammatory disease is always peculiarly hazardous; for even if it should be once subdued, it is not only very liable to return, but to be combined, as in this instance, with other serious irritations. The extent of the inflammation, however, here discovered by dissection would strongly point out

the propriety of uniting to emetics those remedies most approved for the reduction of inflammation, whether it be seated within or on the surface of the body.

ERYSIPELAS.

For practical purposes, erysipelas may mostly be regarded as an inflammatory disease, the seat of which, when simply external, is in the skin; but as in the case just reported, the parts beneath are liable to be implicated, especially the cellular membrane, and the fasciæ of muscles. Erysipelas has been presented to me under two forms, the first of which, by way of distinction, shall be denominated phlegmonoid, the second erythematic; though these are merely modifications of the same disease, and solely dependent for their peculiarities on the condition of the patients whom they attack. It was the phlegmonoid erysipelas which I frequently met with in the country; and the erythematic I have often seen in the metropolis. By contrasting the proper symptoms of each, and the constitutional differences of their subjects, it is hoped, that some doubts and difficulties will be removed in regard to the treatment; and first then for the consideration of the phlegmonoid erysipelas as it occurred to me in the country. The phlegmonoid erysipelas attacks those who had been previously either robust, or at least tolerably strong. The part affected is of a bright red colour, and much swollen, and the attendant fever of the full inflammatory type, the heat being

high, and the pulse expanded and resisting; excepting where an internal inflammation is combined, and then the pulse is liable to be depressed, to be smaller but still tenser than natural. This species of erysipelas commonly terminates either by a considerable effusion of serum into the cellular membrane adjacent, or by suppuration in that membrane, but occasionally by gangrene; and on these accounts, as well as the nature of its primary symptoms, it has so strong a resemblance to phlegmonous inflammation, as to justify the epithet phlegmonoid.

The phlegmonoid erysipelas resembles typhus thus far, that it is either simple or complicated,—simple when the cutaneous redness and the fever are not connected with an internal inflammation, and complicated when they are co-existent with an internal inflammation. In the simple phlegmonoid erysipelas, however, what are called increased determinations of blood frequently take place in different organs, or rather there is an interruption or distension, in the vessels of those organs, which does not usually amount to positive inflammation at any time, but which may pass into inflammation from the continuance of the general excitement. In a word, the simple form of this disease may be converted into the complicated, from the increased action of the heart and the increased re-action of the arteries operating on topical predispositions which had before existed in a latent state; and the more the subject is examined the more certainly will it appear,

that most visceral inflammations are the mere effects of general excitement, the force of which is only so decidedly directed to particular parts, because those parts had been previously weak, or otherwise morbidly disposed. The secretions of the liver are especially liable to be disordered even in the simple phlegmonoid erysipelas, and with them the functions of the whole surface sympathize: indeed a large majority of erysipelatous attacks may be traced to the influence of the atmosphere, or to other causes which operate on the skin and liver, between which so remarkable a consent exists; and in those persons who are most liable to erysipelas it will generally be found, that they are subject to bilious disorders, and to irregular conditions of the skin as to temperature and perspiration. When inflammation of any of the vital organs does arise out of the simple phlegmonoid erysipelas, it is in general the gradual product of a moderate excitement, and assumes the sub-acute character; whereas in the more originally complicated form, the visceral inflammation rapidly supervenes an impetuous excitement, and assumes the acute character, the affection of the cuticle being then commonly the secondary disorder.

When the phlegmonoid erysipelas follows blows or injuries of any kind of the head, more than ordinary care is necessary, for the brain and liver are apt to be inflamed; and I have seen some cases of this nature where the inflammation stole on in the most insidious manner, and at last

proved fatal, under the mask of the external affection. In all the dissections which I have made, in fatal instances of the phlegmonoid erysipelas, the brain, or its meninges, the liver, or the intestines had visibly been the seats of that internal inflammation, which is so frequently the cause of death in this disease. The symptoms, therefore, already enumerated in the inflammatory typhus will enable the practitioner to detect the modifications of the complicated forms; and from what has just been advanced it will hardly be necessary to remind him, that he ought never to allow the mere cutaneous disorder to withdraw his attention from what may be going on in the vital regions of the interior.

If the simple phlegmonoid erysipelas be early attacked by proper measures, it will hardly ever become complicated; and so far as I have observed, it may commonly be removed within the first nine or ten days, provided the remedies be applied from an early period; but when the remedies are not thus early applied, it will often continue much longer, though it may generally be conducted to a favourable issue, by carefully watching over the viscera. At the commencement, one decisive bleeding from the arm should be employed, and immediately afterwards several leeches applied over the external seat of the affection: an antimonial emetic should then be administered,—the bowels freely evacuated by calomel, jalap, and neutral salts,—and a blister afterwards placed either between the shoulders, or over the region

of the stomach. These measures, executed in rapid succession at the beginning, will often entirely subdue the disease in a short time, or at least render it so manageable, that it will yield in a few days to a regular perseverance in purgatives and an antiphlogistic regimen. When the abdominal secretions are much disordered, tolerably full, and even repeated, doses of calomel will generally be needful, in combination with small ones of antimony; for by the conjoint use of these preparations, an aperient, sudorific, and nauseating effect may usually be produced, which most frequently tends to restore the patient rapidly to health again. The only topical remedies to which I am partial, for the phlegmonoid erysipelas, are leeches, and cold saturnine lotions; but the former are infinitely preferable, and indeed in my practice they have proved exceedingly useful, when early applied, which is more than I can say of the saturnine lotions. Some time ago, I saw an erysipelas of the face apparently repelled by a stream of cool air, which played upon it from a broken pane in the room where the patient lay; and signs of coma soon afterwards appearing, death speedily took place with all the common indications of apoplexy, but an examination could not be obtained to ascertain the precise state of the brain. The result of this case certainly seems to bear strongly against the application of cold in one form of erysipelas: but as it is unfair to draw a general conclusion from a particular instance, I wish this merely to stand as a fact fitted to attract notice; and at the same

time it is only proper to remark, that I have never known an erysipelas to be repelled by cold saturnine lotions, though I have seen them very often used. We have been in general dissuaded from the employment of leeches in erysipelas, from their bites having been said to induce gangrene; but from ample experience I dare venture to assert, that this is an occurrence which need never be dreaded in the erysipelas phlegmonoides, when the leeches are early applied in robust habits; and in such they may be safely and beneficially repeated two or three times in the course of the disease, though they should not be recommended in the advanced stages, as possibly their punctures might then become gangrenous.

The prompt yet limited adoption of the antiphlogistic treatment will in general not only prevent gangrene on the surface, but those effusions and suppurations, which sometimes produce so much mischief, when erysipelas is seated in the extremities. Dr. A. C. Hutchinson has published a most valuable paper, in the Medico-Chirurgical Transactions, in which he recommends the treatment of erysipelas by incision. His plan is, to make several free incisions with a scalpel, on the inflamed surface, in a longitudinal direction, through the integuments and down to the muscles, as early in the disease as possible, and before any secretions have taken place. These incisions, the author says, may be about an inch and a half in length, two or three inches apart, and vary in number from six to eighteen, according to the ex-

tent of the surface the disease is found to occupy.* This method was extensively and successfully pursued both by Dr. Hutchinson and several naval surgeons, in that species of erysipelas phlegmonoides, which is so liable to attack the extremities of sailors. From its proved efficacy, and the highly respectable authority whence it proceeds, it is certainly deserving of a more extensive trial in private practice, than it has hitherto received. But those who wish to pursue it, should peruse the precise and perspicuous tract, from which the above information has been briefly cited. It is remarkable what coincidences of opinion and practice may sometimes be found among those who follow the same pursuits, and that too from the independent research of the individuals who so strikingly agree. Though Dr. Hutchinson was not aware of the fact, yet so far back as the time of Dr. Friend, a practice similar to the above prevailed; for the latter observes, in his History of Physic, that in an erysipelas, *scarifying* upon the part, when the membranes are loaded and thickened, will often remove the inflammation in a very sudden surprising manner.†

When phlegmonoid erysipelas is complicated, the brain and the liver are most frequently involved in the inflammatory action. Under this more serious form of the disease the most vigorous

* See Medico-Chirurgical Transactions, published by the Medical and Chirurgical Society of London. Vol. v. p. 282.

† See Vol. i. p. 76, of the History of Physic. By J. Friend, M.D. The fourth edition. London: printed for M. Cowper, 1750.

treatment is demanded ;—the early, decided, and sometimes repeated, use of the lancet, with free local blood-letting by leeches, promptly succeeded by active purges of calomel, jalap, and the antimonial powder. These steps having been taken, a large blister should be applied as near to the region of the internal disorder as the erysipelas will admit, and the calomel should be continued till slight ptyalism succeed; though it should always be determined freely in the day to the bowels by other aperients, while the excitement lasts, for unless this be done it will be difficult to obtain its specific effect. If the brain should be inflamed, and the erysipelatous affection should be so extremely diffused over the face, neck, and shoulders, as to make the propriety of a blister between the scapulæ more than questionable, it may be applied near the site of the stomach, where it will have a considerable influence over the brain, on account of the sympathy which exists betwixt these two organs. This is no speculative opinion, for in many diseases of the head, I have seen the most unequivocal benefit from blistering the region of the stomach.

In the complicated form of the phlegmonoid erysipelas, the depression of strength is greater from the first than in the simple variety, and the pulse often feels less tense ; because the vital functions are more impeded by the additional oppression of the internal inflammation. Nothing, therefore, can be more fallacious than to suppose, in the beginning of such cases, that the apparent de-

pression of strength and of the pulse, prohibits depletory measures;—the fact is, that they strongly point out their propriety, and the system will rise, as if relieved from a load, under their administration. A depressed state of the pulse, in the commencement of febrile disorders, almost invariably indicates the necessity of evacuations; for, on minute investigation, it will be discovered, that it is connected either with local congestion or local inflammation. From the outset, the fever attendant on the phlegmonoid erysipelas frequently assumes the aspect of the inflammatory typhus, and then some internal mischief may be most certainly apprehended. It has been my misfortune to witness this disorder treated as one of real debility, in numerous examples,—consequently wine, bark, and all sorts of cordials, were by turns exhibited; yet this treatment, so far from supporting the strength, hardly proved successful in a single instance. Like almost every other acute fever, the phlegmonoid erysipelas is only asthenic in the last stage, in which an universal collapse occurs, as the mere product of preceding excitement or congestion. These opinions do not rest on speculative grounds; their accuracy has been extensively tried and confirmed in the country, not only by my own experience, but by that of many intelligent friends, in whose hands early and free evacuations have been as highly efficacious as in mine. So far indeed did the firm conviction of the superiority of this treatment carry me there, that I have generally employed it, to a certain extent,

even in old subjects labouring under the phlegmonoid erysipelas; and instead of having had reason to regret the practice, it almost uniformly was more or less beneficial. Since the time of Sydenham, the therapeutics of this disease have undergone many changes in this country. Perhaps there is no one concerning which modern opinions are more uncertain and variable, but we must return to his good old principles, before we can advance a step towards improvement in the treatment of the phlegmonoid erysipelas.

Those who have had one attack of this disease, are extremely apt to have returns of it; and this is especially the case with the simple phlegmonoid, which indeed is a much more frequent disease than the complicated. Persons who are thus predisposed to erysipelas should have the surface covered with flannel, avoid indigestible food, and keep the bowels regular by an occasional dose of castor oil, or rhubarb and magnesia. But whenever the biliary and intestinal secretions are disordered, a full dose of calomel should be taken, as restoring them to a proper condition will often prevent an attack of this disorder.

There is one variety of the phlegmonoid erysipelas, which has not yet received that consideration which its importance and danger deserve. It attacks infants, generally under a year old, and first appears on some part of the upper or lower extremities, leaving one place, and then affecting another, till at last it successively travels over almost all the surface of the body. Nay, I have

known two cases where an erysipelas of this nature went twice over the whole skin, in the manner just described. This disease is often produced in infants by cold; sometimes it arises from the irritation of teething, and at other times from an improper diet and disordered bowels. It is usually attended with a considerable fever, and the secretions of the liver and intestines are very morbid, if not at its commencement, at least during its progress. The little sufferer is liable to become delirious, and, if the disease should not be early arrested, generally expires in coma or convulsions within the first three weeks. Though this is a strictly erysipelas phlegmonoides I have not myself seen it produce those large effusions and suppurations under the integuments, which are not uncommon in the extremities of adults attacked by the disease.

Whatever plan of treatment be adopted in the infantine erysipelas, success will be uncertain; yet in the country the following has appeared to me more efficacious than any other. The primæ viæ should be freely evacuated without loss of time, first by an antimonial emetic, and then by repeated doses of calomel and castor oil; indeed, during the continuance of the complaint, copious motions should be daily procured. If the stools should have a sour smell, or become greenish soon after they have been evacuated, a little magnesia and rhubarb ought to be administered, along with the calomel. Soon after the first attack, also, as many leeches should be applied as will abstract

sufficient blood to induce faintness, which will sometimes prove decidedly beneficial in arresting the disorder. Although an expert surgeon may generally succeed in drawing blood from the external jugular vein, or the anterior branch of the temporal artery, in infants under a year old,—yet all the benefit which can result from bleeding, may be obtained by the proper management of leeches, which, on account of the highly vascular state of the skin, draw more blood from children than adults. Nay, in this particular instance, local is superior to general blood-letting; because by it you can make a direct and powerful impression on the erysipelas itself, and likewise induce a general change in the circulation, by persevering in it till faintness supervene,—or at least until the child begin to heave at the chest, or to turn pale in the face. In fact the local bleeding must be carried on until it shall decidedly diminish the action of the heart, otherwise it will do no good; and I wish to be the more pointed in this remark, because from a disregard to it, local bleeding may at once be brought into disrepute in this disease. The leeches may be re-applied, at any time within the first three or four days from the commencement of the disorder, though they should never be recommended at an advanced stage. Sydenham was a great advocate for bleeding in the febrile complaints of children, and in such complaints they generally bear it well in the beginning, particularly by leeches: but when the symptoms have been allowed to proceed unarrested for

some days, the strength of children often falls with great rapidity under even local abstractions of blood; and in the advanced stages, therefore, purgative medicines should always be preferred to local bleeding, as the evacuation from them weakens less than any other.

When enough blood has been drawn in the infantile erysipelas, a small blister may often be applied with benefit to the region of the stomach, or between the shoulders. If there be any tension upon the gums they ought to be freely lanced, until the instrument distinctly grates on the hidden teeth; for such free incisions often afford great relief, while superficial scarifications are attended with little or no advantage. The general irritation of the system must be allayed by the occasional employment of the tepid bath, or by a few drops of laudanum under the form of an enema; but it should always be recollected that infants are rendered extremely irritable by long fasting, and on this account a little light food will often lessen fever, and apparently put them to sleep. It is of great consequence in all the febrile affections of children to allay irritation as speedily and as mildly as possible; for if it should long continue unsubdued, it mostly exhausts their strength and proves fatal at last. On this account, it is of great importance to attend to the state of the vascular and nervous systems immediately after bleeding in children; and if there should be much quickness of pulse and much irritation combined, a few drops of laudanum and a little food will

frequently induce a state of great tranquillity. But so far as my observation extends, excessive irritation only follows profuse bleedings in children, which are almost always prejudicial, from the violent action of the heart and irritation of the nervous system which succeeds them; and even under such circumstances, the tranquillizing effects of food and small doses of laudanum are sometimes super-eminently serviceable. Yet it is only in cases where great irritation exists, that laudanum should be used for children; and I have reason to believe, that much smaller doses should be given than have been usually recommended by systematic writers. For small doses will often effectually allay irritation when full ones would only produce oppression; and where a small dose fails to allay irritation in children, it is better to repeat it than to venture upon a full dose at once. As the infantile erysipelas is often so very formidable, would it be allowable to use incisions or scarifications on the parts affected? And as these have been ascertained to be serviceable in the erysipelas of adults, and as leeching has also been so in the disease in question, is it not probable, that they might answer a good purpose, if early and judiciously employed? Thus far in regard to the phlegmonoid erysipelas which I saw while practising in the country, and next a few words shall be said on the erythematic form which has come under my inspection in the Fever Institution of the metropolis.

At different times within the last twelve months,

some patients in the Fever Institution have been seized with erysipelas just when convalescent from typhus, when in fact they were weak and emaciated. This form of erysipelas, therefore, supervened in constitutions almost opposed to those in which the phlegmonoid existed, and as it differed not only in this but in other respects, it shall be termed the erythematic. In this form, the efflorescence was not of a bright but of a dull red colour, similar to that of the mulberry, nor was there much swelling of the part, which very often had an early tendency to vesiccation, a thing not observable in the phlegmonoid. The attendant fever was of the irritative kind, the pulse being small, quick, and soft, the heat superficially pungent, and the tongue though dry in the middle, yet mostly moist in a line round the edges. This modification of erysipelas had two modes of accession. It either came on suddenly with little or no previous warning, or it appeared upon the second or third day in an ordinary fever of relapse. Most frequently it had the simple character, especially in the first mode of accession, and under that character invariably, I believe, yielded to a mild treatment; for example, to moderate doses of cold-drawn castor oil which kept the bowels gently open, and to small doses of liquor ammoniæ acetatis and the tepid ablutions, which cooled the skin. But the exhaustion in the subjects of such cases prohibited the active measures suitable for the phlegmonoid erysipelas of widely different habits; yet the heat of the skin, the quickness of

the pulse, the dryness of the tongue, the local pain or tenderness, and the general irritation seemed as powerfully to prohibit diffusible stimulants. So much was this presumption confirmed by experience, that both the topical and the constitutional symptoms of the erythematic erysipelas were always aggravated by animal broth for some time after their commencement; indeed I found thin arrow root slightly acidulated with lemon juice vastly superior, as it supported the strength without increasing the fever. At bed-time, when the bowels had been previously opened, and the heat of the surface diminished by light clothing and tepid ablutions, four or five grains of Dover's powder were sometimes beneficial, as well in procuring rest as in promoting a gentle perspiration. Whenever the stools became unnatural, or the urine tinged with bile, as occasionally happened, a few grains of calomel now and then, followed up by cold-drawn castor oil, were useful, but in the erythema simply, calomel as an alterative is injurious. For some time I have ceased to use local application in the erythematic erysipelas, the result of my experience having shown that, whether employed cold or warm, their effect was exceedingly uncertain, and that they were oftener disagreeable than pleasant to the feelings of the sick. To the best of my recollection, I have not seen an instance of the simple erythematic erysipelas fatal; but some cases have been so which were complicated with internal inflammation, and in two of these the

erysipelatous affection was gangrenous before death. Suppuration is rare in the erythematic erysipelas, and if it should ever destroy without implicating the internal organs, it would probably be by irritation, a circumstance very conceivable in reduced habits.

In few examples only, however, has the erythematic erysipelas been complicated with internal inflammation, though I believe, that such a combination would have frequently taken place had it not been for the mild evacuant and cooling plan which I adopted from the earliest periods. Where the erythematic erysipelas did co-exist with internal inflammation, it was attended with very great danger, on account of the reduced condition of the patients at the time of the attack; and no one without experience in such attacks can conceive how arduous and anxious the management of them is, compared with similar combinations occurring in vigorous patients, who had been previously well. When a visceral inflammation occurs in any one enervated by a prior disease, too free evacuations are followed not only by a sudden shock to what constitutional power remained, but by an extreme irritation of the nervous system, which by agitating the heart soon exhausts it entirely, and thus death rapidly ensues. On the other hand, too little evacuations are to be dreaded, lest the inflammation should be left to pursue an uncontrolled career of destructiveness, in a system where the wasted vitality can at best but offer a feeble resistance; but, ex-

tremes being avoided, cautious evacuations, by local bleeding and purging, duly proportionate to the capacities of the patient, may make a favourable impression, and prepare the way for soothing anodynes, and the recruiting energies of nature. It was in this way, that I have seen some complicated cases of the erythematic erysipelas successful beyond expectation. In the practice of physic, we ought never to forget, that there is a tendency in nature to remedy the remains of many disorders; and it is certain, that exhausted patients may be readily destroyed from an over-officious zeal of doing something, where nothing was required. It was the practice of Sydenham to bleed freely in the erysipelas of his day, which he considered most inflammatory, and it was, therefore, no doubt of the phlegmonoid kind. It would have been interesting if this illustrious man had left us some records respecting the constitutional frame and cast of the people among whom he pursued this practice, and also respecting their ordinary manner of living; but much valuable information has been unintentionally omitted by our predecessors, because certain circumstances were then known so universally as to appear to them unnecessary to be mentioned, though in fact they formed peculiar traits in the history of their own times. Probably in the time of Sydenham the constitution of the metropolitan poor was more vigorous than now, their diet more nourishing, and their habits more temperate, so that as a mass they nearly approached to what country people are at present; but be this as it may, it is

certain, that many practitioners in the metropolis have not only abandoned his treatment in the erysipelas, but have substituted one stimulant in all respects. It would ill become me to speak with dogmatical assurance upon this subject, but since my residence in London I have met with no instance of erysipelas in which stimulants were indicated in the early stages; and I cannot but suspect, that the tone of opinion as to the nature and treatment of this disease has been taken too much from hospital practice, where cases of the erythematic erysipelas are probably not unfrequent. Nor can I refrain from imagining, that the erythematic may have been often confounded, in the vagueness of general descriptions, with the phlegmonoid erysipelas; for I have witnessed examples of the latter, in which early depletion was borne in some robust patients as well and as advantageously as in the country, though not carried quite to so great an extent. Generally speaking, less depletion is required in London than in the country, because a less amount of evacuations will induce a relaxation in the inhabitants of the one, which it would require a greater to induce in those of the other: but as the residents of London are made up of a great many classes, whose manner of living and moral habits must necessarily be various, I am convinced that in this immense population, vast numbers are to be found who can bear moderate evacuations well in the beginning of acute diseases; though I readily admit, that the feeble constitutions of some

and the enervating habits of others render much caution necessary in the employment of depletion, as has already shown in speaking of typhus, and the erythematic erysipelas. Between the phlegmonoid and the erythematic erysipelas, I have seen a few cases which seem almost to partake of the nature of each; and such intermediate instances were successfully conducted by a treatment intermediate between that recommended in the two former.

Many writers have considered pure erysipelas contagious under certain of its modifications; but I have not meet with a single fact which would justify me in drawing such a conclusion. It is remarkable, however, that it is more common in hospital than in private practice, even where the cleanliness of the rooms and the personal comforts of patients are the same; but as in hospitals it prevails at certain times of the year and disappears at others, it would seem to be connected with some general as well as local state of the air; one of which may stand in the relation of a predisposing, and the other of an exciting cause of this disease. It is curious why the face should be so much more frequently affected than any other part; but asit is much more exposed than the rest, that exposure appears to give a predisposition. Sometimes I have observed, that the attack took place on that side of the face next to a window; but more often upon that side of the face which the patient had pressed against the pillow. Whenever in hospitals a tendency to erysipelas is ap-

parent, the use of local bleeding by leeches, and of blisters should be resorted to more cautiously than when no such tendency exists; for then the punctures of leeches, and the blistered parts are apt to become erysipelatous, and if the patients be weak, this additional irritation might be serious. Even at such times, when a vein is opened, it should be closed with the greatest care, and the arm bandaged with the greatest exactness; because if a pad and bandage were slovenly applied, they might produce about the puncture some irritation, and that again be followed by erysipelas in the part. Every medical man should accustom himself to habits of great neatness in all that he does about the sick, for nothing should be deemed trifling which relates in the slightest degree to their comfort or security.

RHEUMATISM.

Rheumatism has been divided by authors into the acute and chronic, but a more natural division would have been into the acute, sub-acute, and chronic. As the two former, however, might be said only to differ in the degree of their intensity and duration, they shall be treated of as one, agreeably to the common arrangement, and the chronic will not be made an object of consideration here. The acute rheumatism is an inflammatory disease generally attended with considerable fever, and the seat of the pain appears to be generally in the fasciæ of muscles, or

in the membraneous investments of the joints but I am persuaded, that the muscular fibres themselves are sometimes affected, not only in the external parts of the body, but even in the heart and intestines occasionally, when the rheumatism suddenly leaves the former and attacks the latter. Yet where no translation of this kind occurs, rheumatism ought not always to be viewed, as is generally done, simply as an affection of the superficial tissues; for in some instances, I have seen inflammation of the different viscera occur, from the force of the general excitement, on the principles before explained. Though the acute rheumatism, therefore, be spoken of as if it were a simple disease, yet all along I wish it be clearly understood, that it may be complicated with those internal inflammations, which have been so repeatedly pointed out as the concomitants of other febrile affections.

At different periods, my practice has been more varied in the acute rheumatism than perhaps in any other complaint, merely because none appeared to me sufficiently successful for a long time. On repeated trials, however, at last I found, that very early venesection, first succeeded by purgatives, next by calomel, opium, and antimony, was far better than any other of the tried plans, when followed up by local bleeding, blistering, the warm bath, and an antiphlogistic regimen. But the acute rheumatism is generally much more remediable at its first invasion than when it has remained for some days. Many febrile diseases

seem to have a sort of determined duration, when they are allowed to proceed without interruption for a certain period; and this is often so remarkably the case in acute rheumatism, that many practitioners have inferred its course cannot be shortened, even when encountered from the first. But I am now thoroughly convinced, that this disease would seldom be protracted, and by consequence would far less frequently put on a chronic form, if evacuants and alteratives were promptly used at the commencement; and deeming this to be a practical truth of much importance, I would repeat it again and again, that practitioners might be awakened to that promptitude and decision, which most acute attacks of this affection demand.

On the first attack of the acute rheumatism, I generally used to order from twelve to twenty ounces of blood to be abstracted, then to purge the patient briskly for about two days, and afterwards to saturate the system with calomel, combined with sufficient doses of opium and antimony to allay pain, and excite a gentle perspiration. There was commonly an obvious relief of symptoms as soon as the mouth became tender. By maintaining the specific action of the mercury for about ten days, and by keeping the bowels in the mean time soluble, the cure was most frequently accomplished, in cases which had thus been treated from the beginning. In several instances, however, which fell under my observation in the country since the first edition of this treatise was published, I repeated the general venesection

promptly, when the first operation failed to give a marked relief; and wherever this practice was employed, and speedily followed up by purgatives, with calomel and opium, the recovery was extremely rapid. The results of my own experience, therefore led me to conclude, that acute rheumatism may in general be quickly arrested at the beginning by proper applications; and perhaps future experience will bear me out in the opinion, that it is, for the most part, only a protracted disease when palliatives are used, instead of powerful measures at the onset. It must, however be admitted, that when acute rheumatism has existed unimpededly for a few days, the best expedients will not reduce it at once, though they will commonly lessen its intensity and shorten its duration. In the treatment of acute rheumatism, as of simple inflammations of the viscera, we must not expect bleeding, purging, and alteratives to be successful when separately employed: but it is in the combined agency of all these, brought rapidly to bear on the disorder, that we must look for the full effect; and to censure these measures one by one, because they each may fail, is to disregard their conjoint influence in their particular properties. When the specific action of mercury has been obtained after bleeding and purging, it ought to be wholly omitted, or only given in very small doses, according to the degree of its influence: and the bowels should still be daily moved, for the employment of purgatives always accelerates recovery in the most acute cases, and where the disease has

been partly broken at the first, no medicines are more beneficial; but in such cases as the last they should be daily administered for some time, and upon the whole the sulphate of magnesia and castor oil, especially the latter, will be found to answer the best purpose. It is a rule with some practitioners to repeat blood-letting in inflammatory diseases so long as the blood shall remain buffy. Nothing could be more fallacious than this rule in rheumatism, for where it is not successfully arrested at the onset, the blood will continue to show the buffy coat, in despite of repeated venesection; and in such examples we must not pursue the evacuations of blood merely from the continuance of the buff upon it, but laying the lancet aside, rely upon milder measures for eradicating the disease.

As the pain is often excruciating in the acute rheumatism, I must warn the inexperienced not to let the circumstance induce them to prescribe opium in large and repeated doses; for by such a procedure I have known some patients become almost comatose, and actually saw two who had been forced into an apoplexy by the too free exhibition of this drug. Neither agreeably to my observations, is the common practice of applying rubefacients, to the parts affected with the most violent pain, at all a safe one; at least in four cases where they were thus employed, the rheumatism receded from the integuments, and in three of them the heart was attacked with inflammation, and the intestines in the fourth. One of

the former, and the last did well by bleeding, laxatives, an alterative course, and blistering; but the other two examples were fatal under a similar treatment. The acute rheumatism, too, sometimes suddenly recedes from cold air applied to the skin, when there is a free perspiration; and I once saw an instance of this kind, caused by getting incautiously out of bed in a winter's night without clothing, in which the patient sunk with great rapidity, apparently from an affection of the heart. But the acute rheumatism as before hinted may exist in the joints simultaneously with an inflammation of some of the viscera; and within the last year I met with two such cases, both of which did well, though in one the liver, and in the other the pleura was inflamed. Leeches to the seat of the rheumatic affections sometimes do a great deal of good, after general venesection; and so far as my experience has extended, they are perhaps the only local applications which may prove useful, without the risk of causing translation. On the principle of counter-irritation, I have sometimes applied blisters, with advantage in acute rheumatism, to the region of the stomach or between the shoulders; but the former place is generally preferable, on account of the great sympathy which the stomach has with all parts of the body. When, however, on the sudden subsidence of the external pain and inflammation, some of the viscera are attacked, the blisters should always be put over the parts where the disease had originally existed, as their power of counter-

irritation is useful, particularly when excited on those parts. As local applications, Dr. Balfour of Edinburgh, in an ingenious publication, has lately called the attention of the faculty to the utility of bandages in rheumatism; but I regret extremely, that the trials made of this method in my practice have not fulfilled his anticipations. It is well known, that rheumatism most frequently arises from the vicissitudes of the weather, and that persons who have once been attacked are liable to repetitions of the disease. One of the best preventives of this complaint in the first instance is a good covering of flannel or fleecy hosiery next the surface: and the one or the other of these should be almost always worn by persons who have had an attack, else they will be extremely liable to relapses. By those to whom flannel or fleecy hosiery is uncomfortable on account of its irritating the skin, wash-leather shirts may be worn in cold weather under their linen, for they keep the surface very warm; but in the summer season, the wash-leather is not so suitable as thin flannel or worsted hosiery, because the first when imbued with perspiration is apt to chill the surface, which is not the case with either of the last. Most of the inflammatory diseases of this country arise from the sudden vicissitudes of the surrounding atmosphere, by which the animal heat is so abstracted from the surface that the blood retires too superabundantly into the internal parts, and this venous congestion produces the excitement of the heart and arteries which ends in inflammations;

but if some such thing as flannel were universally worn next the skin, the temperature of the surface would be kept so uniform as to prevent these congestions from the changes in the air, and thus numerous other diseases of inflammation, besides rheumatism, would very often be prevented. In the whole range of preventive expedients, whether they relate to acute or chronic disorders, none are of more importance than those which maintain an uniformity of the animal heat on the surface of the body; for it cannot long sink below the natural standard there without occasioning internal accumulations of venous blood, which may be immediately dangerous when excessive, and which may be ultimately so when moderate, from the local predispositions then impressed, and the general excitement afterwards created.

Principally from the strong terms of recommendation in which a much valued friend spoke of the colchicum autumnale, I have been induced, within the last year, to try it in the acute rheumatism; and certainly it has given a more speedy and decided relief, than any other single remedy which I ever saw employed, so that I am disposed to believe it a most valuable adjunct. In some instances, I have given it when the rheumatism was combined with signs of certain degrees of inflammation in the head, chest, or abdomen; and in all of these, the local irritations of those parts were remarkably alleviated with the rheumatism, apparently from the influence of this remedy. My own experience, however, would by no means

justify me in drawing a confident conclusion, that the colchicum exerts a general power over inflammatory diseases; though an experienced relation of my informant has long used it with signal success in such affections, and I trust that he will shortly lay the results of his practice before the medical public. The preparation which I have used is the tincture, made by macerating for about a fortnight two ounces of the recent bulb of colchicum, taken I believe in the beginning of summer, in four ounces of proof spirit; and of this tincture, perfectly transparent, one drachm has been given night and morning in the more violent cases, and about half a drachm in those of a less urgent nature, until the pain and fever have abated. Where the acute rheumatism was seen early, the lancet was always premised, and laxatives always daily ordered at whatever period they might be seen; and though partial to calomel and opium, from that sort of attachment men form to remedies which they have long prescribed, yet I must confess, that the cures have been as rapid and fully as complete by the colchicum, aided by the bleeding or laxatives. From narrowly watching the effects of the colchicum I cannot refer its efficacy to any species of evacuation; for it has been serviceable where it neither acted on the bowels, kidneys, nor skin, though occasionally it did act on these parts, especially the first. Where the colchicum was decidedly beneficial it produced three effects invariably; namely, it reduced the heart's action, it lessened

the animal heat, and it abated pain. Its mode of operation, therefore, must be referred, like that of other narcotics, to some power first exercised over the nervous system, by which the action of the heart, the animal heat, and the pain are ultimately influenced. It is my settled opinion, that some great discovery will be made in therapeutics, by which the treatment of most if not of all febrile diseases will be made much more simple and successful: for we frequently now only employ bleeding, purging, and other ordinary means, not because they are the best which can be discovered, but merely because they are the best which we know of in the present state of our imperfect knowledge. From the great power which certain narcotics possess over the nervous and thence over the vascular system, it is highly probable that some agents of that tribe may yet be found, by which the dominion of medicine will be much extended. Whether colchicum be one of these, the experience of others hereafter must determine, but I have seen enough of its effects to be convinced, that few articles of the materia medica are more deserving of consideration. The medical accounts which we have of this drug are so exceedingly defective, that a great deal remains to be known, not as to its practical application only, but as to the best seasons of gathering, and the best modes of preparing it for use. The colchicum has been given with marked advantage in the form of powder, and some, I know, prefer this to any other preparation. In the adminis-

tration of the tincture, the only cautions which I have found necessary is to give it in moderate doses, and not to continue it too long. It has been thought that the deposit of the tincture is highly pernicious, and I was once induced to believe it was so, from having seen sickness and other unpleasant symptoms follow a dose of the turbid tincture; but some accurate experiments, I understand, have been recently made which show, that an active principle of that nature does not reside in the deposit.

It has been objected, I am informed, that the colchicum though it may subdue the symptoms for a time, yet it leaves the system prone to returns of the rheumatic affection. But similar objections might be started against other means, because it is a part of the character of rheumatism to be liable to return under any treatment; and as this liability is not greater when colchicum is given, the objection with respect to it in particular must at once fall to the ground. Since the introduction of the depletory practice, bark has been almost entirely neglected, but it is not improbable, as was lately suggested by an enlightened physician,* that it might sometimes be

* Dr. Uwins—to whom I am indebted for having suggested to me the propriety of referring to the doctrine of critical days and to the question of contagion, respecting both of which, in consequence, some remarks have been added under the head of typhus in this edition. It has sometimes struck me that a more intimate connexion may exist than is commonly imagined between some of the apparently contagious diseases of the lower animals and those of man; and having forgotten to allude to the circumstance before, I should now be disposed to recommend it as

useful in warding off relapses; and it certainly does contribute towards this effect after the subsidence of an attack of rheumatism, with laxatives, and proper precautions as to clothing and diet. But when the acute rheumatism did return, I have known it yield more rapidly to the colchicum than to any thing else; though even in such cases, venesection has been sometimes, and purgatives always necessary, except where the strength was not sufficiently confirmed before the secondary seizure.

A few cases of one species of rheumatism have occurred to me which were fatal under every method of treatment, and these suddenly supervened in patients exhausted by a prior disease of severity. They were marked by extreme agitation of the whole frame, constant moaning, an anxious, impeded breathing performed, as it were, by fits and starts, a very small irregular pulse, and acute pains in some of the joints, and courses of the muscles. None of the patients survived many hours, and they seemed to die, from some spasmodic affection of the muscles of respiration, probably extending to the heart itself, the action of which was strangely disturbed from the first. In the ordinary cases of acute rheumatism translated to the heart, the surface of that organ often has

worthy of serious observation, since it seems to have been strangely neglected. If any one had been told many years ago, that a certain matter from the cow would prove at all preventive of the small pox he might have smiled at the idea as perfectly ridiculous; but experience is constantly showing us relations in nature of which we had no anticipation, and it is highly probable, that other important discoveries will be made to narrow or annihilate certain contagious diseases.

a sort of tripe-like appearance, from the lymph effused by inflammation; but in the cases here particularly alluded to, nothing morbid was found about the heart, except, that it seemed more expanded than natural, as if it had suddenly relaxed from a constricted state. In one instance, the spinal cord was examined in order to ascertain, whether it might be concerned in the train of symptoms, but nothing unnatural was discovered there; nor indeed could the most careful examination detect any appearance sufficient to account for the death of the patients. For some time after the first attack, the heat is sunk below the ordinary standard, and of course this is a clear indication to restore it as speedily as possible by external and internal warmth; but as the muscles of respiration and the heart seem so much disturbed, what would be the effect of the electric influence directed through the chest? But as I am wholly ignorant of any method of curing this disease in the very debilitated habits whom it attacks, I must leave it for the investigation of others, and advance to firmer ground.

OPHTHALMIA.

Were I desired to adduce a particular disease, for the purpose of establishing the efficacy of blood-letting in the way so often recommended in these pages, it should certainly be a common attack of the acute or sub-acute ophthalmia, because in both the effect would be more imme-

diately manifested than in almost any other disorder. There is perhaps scarcely an ordinary inflammation more under the control of art than that of the eye, and yet there is perhaps hardly any in which we more frequently fail. The reasons are simply these. Instead of adopting decisive measures early, for the most part we satisfy ourselves with merely secondary ones, such as local bleeding by leeches, lotions, and the like; and therefore we generally find the disease protracted and obstinate. Once more, I must earnestly protest against half-measures, especially in this affection, which involves the functions of an organ of such high utility and importance. In numerous instances I have seen the eye either greatly injured or totally lost from inflammation, the progress of which had not even been retarded by the ordinary routine of treatment. If any one wanted to have demonstrative proof of the uselessness of indecisive, and the efficacy of decisive bleeding, he might easily obtain it in a recent case of ophthalmia. Abstract a small quantity of blood from the arm of any patient labouring under such an affection, and, provided it does not influence the pulse, there will commonly be as much pain and intolerance of light after the operation as before it. But let blood be taken away until the face turn pale, the pulse begin to flutter, or until some degree of faintness be evident, and the patient after the operation will most frequently be able to open his eyes, and look about him, expressing wonder at the change so soon produced. An experienced

surgeon, with whom I have long had professional intercourse, always bleeds his patients afflicted with inflammation of the eyes from a large orifice, as they stand erect upon the feet, and this is the mode which I too have generally preferred; having found, as before stated, that it sooner makes an obvious and great impression upon the circulation than any other, and thereby enables us to attain our object by a moderate abstraction of blood. The tunica adnata, which before venesection had been completely red, will often be found comparatively blanched after it, with a most sensible relief in almost every other respect. In the majority of examples, I have not known it requisite to bleed more than once in this impressive mode, and even in the most urgent cases, rarely more than twice, when the inflammation was attacked at an early period; but then the general venesection has been almost uniformly succeeded by local blood-letting with leeches, scarification of the eyes,* brisk purgatives, blisters behind the ears or on the neck, and, sometimes by calomel and opium, where the disorder has been unusually obstinate. In all cases, indeed, I have used opiates after decisive depletion, and they have uniformly been more or less beneficial. As for lotions, so universally advised, I have seldom recurred to them in the acute or sub-acute inflammation of the eyes, having effectually succeeded without

* Scarification of the lining of the upper and under eye-lids is often of very great service, and it should always be recurred to in severe or obstinate cases.

them. Although the above remarks are designed to be mainly limited to the ophthalmia arising from common causes, yet they may be usefully applied to those inflammations of the eyes, which supervene the operations of couching and extraction: and I am the more anxious to mention this, because some oculists of distinction do not deplete sufficiently in them, but rather trust to cold applications, and other secondary measures, by which they may often deceive themselves, and disappoint their patients.

It has been recommended again and again in these pages, that patients should be bled early in dangerous inflammations, until an impression was made on the pulse, until in short the enfeebled state of the heart announced faintness or approaching syncope; but in doing the operation thus determinedly, the practitioner should always be prepared, without a moment's loss of time to lay the patient flat down as soon as ever the indications of faintness or syncope approach, and to dash some cold water forcibly against the face, that the lungs may be fully inflated with air. Perhaps these directions may seem quite superfluous to the ultra-phlebotomist, who can never see any danger from copious bleeding, under any circumstances of carelessness after the operation; but the student should be told, that for want of the precautions abovementioned, very copious bleeding, I know, has led to a fatal result, where the syncope came on more suddenly than was anticipated, and where the practitioner lost his presence

of mind. It is seriously to be regretted, that in systematic works, the practice of physic is made a sort of plain sailing, neither the rocks nor the shoals being pointed out in the charts which are there laid down. From all the inquiries which I have made it would appear, that death from copious blood-letting is a most rare circumstance; and as where it did occur it was owing not to the quantity of blood drawn, but to a neglect of laying the patient at once down as the syncope came on, so I should be confident that it ought never to occur under proper management. Yet young children in particular should hardly ever be bled to syncope, for the convulsions, which in them are so liable to accompany that state, might easily prove mortal. When called to patients who had previously lost much blood from wounds or accidents, practitioners should never raise them erect, but dress them supine, for I have known a fatal syncope induced by a sudden change from the latter to the former position; and when performing operations, too, surgeons should be upon their guard respecting syncope, for in a peculiar habit the shock of the operation, together with the loss of blood will now and then be attended with some hazard to the heart's motion, unless due precautions be taken. In persons who have once fainted from loss of blood, and whose pulse has a remarkable sort of silky softness from extreme relaxation, all motion ought to be carefully restrained for some time afterwards, by placing the hands of attendants on the head, trunk, and ex-

tremities. This is especially necessary in uterine hemorrhage. It is surprising how excessively irritable patients often are after very large losses of blood, and how soon motion of the body will renew syncope, by exhausting the heart. No one can practise physic successfully in inflammatory diseases who is not decisive, and who does not feel a deep and an enduring interest in the welfare of his patients; but medical men should accustom themselves to that comprehensive collectedness of mind which enables them to do every thing necessary with the utmost promptitude on sudden emergencies; since in the history of every practitioner's experience occasions will take place, in which the life of his patient and his own reputation require rapidity both of thought and of action.

Antimonial emetics have been given with great advantage in ophthalmia, but my own experience of their effects in this disease has been too limited to enable me to speak decidedly as to their general influence in it. From the universal introduction of purgative medicines, emetics have gradually fallen into undeserved neglect in many diseases, especially in those any way connected with the head; for in the latter there is much too common a prejudice against the *use* of emetics, which has perhaps originated from their indiscriminate *abuse* in some serious diseases of the brain. In most affections seated about the head, where arterial re-action is strongly developed, it is best to bleed and purge before the exhibition of emetics, as

Sydenham has advised; and this practice will sometimes succeed very well in marked disorders of the brain, as for example in some cases of mania.

What is called the febrile nettle-rash is in general a very mild disease, which often arises in peculiar habits, from something taken into the stomach, such as certain fruits or shell-fish; but occasionally it assumes an alarming character, and has a first stage of marked oppression connected with congestions of some of the viscera. Sometimes this stage gives way, and is followed by one of excitement with evident signs of internal inflammation, commonly of the liver, requiring venesection, purgatives, and similar remedies. Again, in other instances, the congestions from the first are so excessive as entirely to prevent the emergence of the excitement, and there is then all the danger of the highly congestive typhus; in three cases of this kind which fell under my observation, the patients had the most distinct symptoms of apoplexy, and the extremities were below the natural temperature. It is remarkable, that in two of them, antimonial emetics gave almost immediate and complete relief, by removing a great deal of crude matter from the stomach, and inducing a change in the whole circulation; and even in the third, they were of much benefit, in combination with bleeding, purgatives, calomel, blisters, and the warm bath. Several highly eminent authors have expressed their unqualified disapprobation of emetics in apoplexy; but never-

theless I have often seen them most decidedly serviceable in that disorder, when it was connected with an overloaded or disordered stomach, by which the heart was oppressed through its sympathy with that organ,* as was the case in the three examples mentioned above. These observations, however, are not made entirely to show the efficacy of emetics, under such peculiar modifications of apoplexy; but are also intended to suggest, whether they might not be usefully administered in the highly congestive typhus, and similar complaints. In the commencement of every modification of infectious fever, particularly in those of a congestive character, the stomach is always affected, to say nothing of the liver; now as we know in the nettle-rash and other diseases, that a deranged state of that organ can powerfully oppress the heart, disorder the functions of the skin, and lead to great congestions, why may it not be intimately connected with the production of the phenomena of highly congestive fevers proceeding from contagion? If this be really the case, is it not very probable, from the facts already adduced, that early emetics would be beneficial in such affections? But these parts of

* We are in possession of many facts, revealing an intimate and rapid intercourse between the stomach and the heart: from observation I am satisfied that certain substances taken in the former, sometimes either suspend or excessively depress the action of the latter. Some cases of this kind are fatal, and then the patients are usually supposed to die of apoplexy; but in most instances relief is obtained by spontaneous vomiting, and where that does not immediately take place, an emetic will generally soon induce recovery.

pathology and practice must be left for others to investigate hereafter; for being highly important, they require to be settled, not by conjecture or analogical reasoning, but by observation and experience. These digressions however have kept me too long from the original subject.

Even in chronic ophthalmia general venesection is frequently of more benefit than any other measure, and where the structure of the eye remains uninjured, it should be more commonly used than it is at present: but I must observe in this place, that when chronic ophthalmia is seated in the tunica adnata, and not the sequela of a previously acute inflammation, it is far more frequently symptomatic of some disease in the brain than has been supposed; and whenever it is thus a secondary affection of the cerebrum, it can only be removed by bleeding and other means, which remove the original and distant disorder. Yet chronic inflammation of the eyes themselves often arises from a gradual accumulation of blood in the lining of the under and upper eye-lids, which are thereby made to press upon, and to irritate the eyes into inflammation. In every case, therefore, of chronic ophthalmia, this membrane should be examined, by inverting the eye-lids a little with the fingers; and whenever it is found preternaturally distended with blood, scarifying it freely and repeatedly will generally be attended with the best effects. Small specks are apt to form upon the lucid cornea, in the progress of chronic ophthalmia, and so are small ulcers, which may

easily be confounded, at first, with the former; but to prevent mistakes of this kind, a small ulcer may always be distinguished by its being indented in the middle, whereas a common speck is almost always prominent at that point. By having been mistaken for specks, I have known ulcers allowed to commit considerable ravages upon the structure of the eye. But if a solution of the nitrate of silver be opportunely applied, it usually soon heals ulcers of the cornea, and indeed often proves efficacious when they had existed for a considerable time; except when they are connected with irritations about the digestive organs, and then these must be removed by appropriate means before the ulcers of the cornea can be cured. It may finally be observed with respect to chronic ophthalmia, that the sulphureous waters of this country will frequently remove it, when every other measure had previously failed; and this is more especially the case when chronic ophthalmia is combined with the strumous temperament, a circumstance by no means uncommon.

TIC DOLOUREUX.

Boerhaave well knew, Dr. Johnson tells us in his biography, that the originals of distempers are often at a distance from their visible effects; and the justness of this observation may at once be illustrated by a very remarkable example. It has been supposed, that tic douloureux is primarily seated in the nerves of the face, and the

able and ingenious Dr. Parry modified this the general hypothesis of the times, by placing the disease in the capillary vessels ramified upon the facial nerves. But, with every respect to the opinion of this distinguished individual, tic douloureux appears to me to be a complaint of the brain itself, to which the disorder in the face merely stands in the relation of an effect. This opinion has been impressed upon me by a careful examination of the cases which have fallen under my own eye, in the whole of which the affection of the face was preceded and attended by clear manifestations of cerebral disease, such as pain, giddiness, confusion, or some other uneasiness in the head, more or less disorder in the functions of some of the external senses, with symptoms of congestion, or of increased action in the vessels of the brain;—and sometimes the stomach and liver were simultaneously or sympathetically affected, a circumstance not uncommon in many diseases of the sensorium. That tic douloureux should have its origin in the brain, will not appear at all surprising to those who have directed their attention to the pathology of that organ; since in several of the disorders to which it is liable, what might seem, at first sight, the most urgent symptom, is seated at a distance from its source. Indeed this happens in other diseases, as may be instanced in certain forms of hepatitis, where the pain is most severe at the top of the shoulder, and in certain affections of the hip-joint, where it is most severe in the knee.

Considering how very little had hitherto been effected by treating tic douloureux as a mere facial disease, and being forcibly struck with the appearances that indicated its seat to be in the brain, I resolved to try, under favourable circumstances, the power of decided bleeding and purging. The first two cases in which this treatment was pursued, had not existed six weeks, and both of them yielded to it without much resistance. It was afterwards adopted in three others, of as recent a date, with the same result; and it was successful in another of much longer standing, by being followed up with calomel and opium. As in most other diseases of the brain, it has been usual with me in this to combine general with local bloodletting, and not only to continue the use of purgatives for some time, but also to apply blisters occasionally, either to the scalp or to the nape of the neck. From one case which I have myself seen, and from two others of which I have heard, it seems to me most probable, that the depletory practice will not generally succeed, in those examples of tic douloureux which have continued some years; although, when judiciously employed, and succeeded either by an alterative course, or by small and repeated doses of arsenic, it will perhaps afford the fairest chance. Why the chronic may be very different from the recent tic douloureux, a little reflection will readily reveal. In the commencement, this disease merely consists in disordered action, but when it has continued a long time, that disordered action may have pro-

duced derangement of structure, or at least such a confirmed dilatation, or other morbid condition in the cerebral vessels as cannot be removed. It is certain that persons afflicted with tic douloureux may live many years, and even sometimes have the appearance of good general health; but it will, I believe, be found that they most frequently die suddenly at last from oppression of the brain, a circumstance which tends to strengthen the opinion here advanced, as to the original seat of this disorder.

In tic douloureux, however, little advantage is to be expected from any plan of cure, unless the strictest attention be paid to the diet, which should be spare, and exceedingly simple. In chronic diseases it is very common for patients to complain, that they derive no permanent advantage from any thing; for in fact as soon as ever the disease is lessened or removed, they are constantly liable to renew it, either by generating too much blood, or by creating some irritation, from irregularities in the diet. It is not enough that having once made an impression on the symptoms of a chronic disorder, we should rest content with a sort of truce, in which it is apt to make frequent and at last formidable returns; but we should endeavour, by the most peremptory enforcement of a proper regimen, and by maintaining a regular action on the bowels, wholly to dislodge the lurking mischief. After all, tic douloureux is probably one of those disorders which finally will be found under the common influence of some nar-

colic; and in two solitary instances of long standing, which had resisted the ordinary treatment, considerable respites were obtained by small doses of the extract of stramonium.

There is a peculiar affection of the brain, which is nearly allied to tic douloureux; but instead of fixing on the face, the pain, which most attracts attention, is seated in one of the fingers, and most frequently under the nail. So very severe is this pain, that some patients whom I have attended could not be convinced but that the disease was solely confined to the finger, though they were afflicted with giddiness, and what they called nervous head-aches, noise in the ears, occasional dimness of sight, some degree of deafness, and other alarming symptoms. There is seldom redness or much swelling perceptible on the affected finger, but it is generally sore to the touch, and the pain at times greatly abates, and again becomes urgent. This disorder requires a treatment similar to that of tic douloureux, and local applications are of no utility. There is one case of this kind on record, in which amputation of part of the finger afforded no relief; and another has been reported to me on good authority, where the operation likewise completely failed. Nor will this appear surprising when we consider, that the pain of the finger is dependent upon a distant derangement, and therefore can only be removed by removing the cause from which it proceeds.

Periodical head-aches are also closely related in their pathology to the two diseases just mentioned,

for, like them, they most frequently arise from congestion or disturbed action in the vessels of the brain, and are therefore remediable upon similar principles. From an extensive experience I am authorised to affirm, that they may in general be speedily removed by one decisive blood-letting, with a few brisk purgatives, succeeded by the cautious exhibition of Dr. Fowler's solution of arsenic; a preparation which should always be given immediately after a light meal, otherwise it will be apt to disagree with the stomach. In two instances only, I have known the arsenic fail, after depletion, in the periodical head-ache, and both being complicated with hepatic disorder, they were afterwards cured by calomel and opium.

CALOMEL AND OPIUM.

Much having been said about calomel and opium in the inflammatory diseases, perhaps it may be satisfactory to inquire before concluding this section of the work, who may be entitled to the merit of introducing this combination, as a *general* remedy for inflammatory affections. It is well known, that quicksilver was a component part of an unguent, which Rhazes used and recommended in cutaneous disorders; that the preparations of this mineral were long afterwards most successfully applied to the cure of syphilis; and that, more recently, their efficacy was established in hepatitis, first by Eastern, and afterwards by European, practitioners. Mercury, then, was first

successfully employed in three different kinds of inflammatory diseases, and though with the most signal advantage in two of them, no person as yet had inferred its *general* utility in inflammation; the honour of that discovery having been first reserved for the late Dr. Robert Hamilton of Lynn Regis. This author candidly acknowledges, that, at the close of the year 1764, a naval surgeon who had served eight years in the East Indies, informed him, that the established method of curing hepatitis in that country was by mercury, after venesection, and the exhibition of a gentle purgative. Some patients falling ill of that disorder at Lynn Regis, soon after the arrival of his friend, Dr. Hamilton tried the method of cure by mercury, and it proved successful. He used the ointment in very few instances, and gave no preparation internally but calomel, to which, however, he shortly found it necessary to add opium, in order to relieve pain, which answered that purpose most effectually. This success led him into the following train of reasoning. The efficacy of mercury in ophthalmia had been long established, and its specific virtue in every symptomatic venereal inflammation: its liberal use in the modern way of inoculation had also shown its power of abating inflammation; while its success over the hepatitis in India, and in the late instances of that disease which had passed under his own eye, were fresh proofs of its excellence. Reflecting on these things he was led to consider, that the general cause, be what it may, of an inflammatory diathesis,

he saw equal advantage result from the calomel and opium, in inflammations arising from external injury, either in the head, thorax, or abdomen, as he experienced in those arising from an internal cause.

Having named the disorders in which his first experiments proved successful, he proceeds to give a detail of his general mode of practice, since that period in all inflammatory distempers; from which it is evident, that he did not entirely trust to calomel and opium, their administration being premised by evacuations. Blood was directed to be taken away in the beginning of the disease, in quantity proportioned to the violence of the inflammatory symptoms, and to the age and constitution of the patient. The bowels were next ordered to be opened, either by a clyster, or, more commonly, by a gentle purgative. After which, a composition, consisting of from one to five grain doses of calomel, and from a quarter to a whole grain of opium, was administered every six, eight, or twelve hours, according to the age and strength of the patient, and to the degree of inflammation; a plentiful dilution of barley water, or any other weak, tepid beverage, having been at the same time strictly enjoined. The patient was generally very much relieved, after having taken three or four doses of this medicine in the course of twenty-four hours; and the distemper commonly gave way in twenty-four hours more, and soon terminated afterwards. But if relief was not obtained within the first twenty-four hours, and the high

inflammatory symptoms remained with little or no abatement, which the author affirms was rarely the case, he ordered more blood to be abstracted; and not only exhibited the mercurial composition more frequently, but continued it until the distemper resolved, by sweating, purging, or ptyalism. If this curative mode was employed early in the disease, the patient's recovery was soon accomplished, whatever might be the operation of the mercury, whether it acted on the skin, bowels, or salivary glands. But if employed late, it was attended with more uncertainty, though recovery most commonly took place the soonest when the salivary glands were affected. If the fever was violent, accompanied with a dry, contracted, arid skin, emetic tartar, and sometimes camphor, was added. And the author states, that he never found any medicine, either in a simple or aggregate state, produce so speedy and effectual a relaxation of the skin, and a plentiful perspiration, as a composition of calomel, opium, emetic tartar, and camphor, which also has the advantage of increasing the evacuations by stool and urine. He appears to have frequently directed blisters to be applied, especially at an advanced period of any visceral inflammation, conceiving them to be very powerful auxiliaries to the internal method of cure. After the distemper was evidently on the decline, he seems to have been rather partial to the exhibition of bark, particularly in the acute rheumatism, but always took care to keep the bowels soluble.

It had been alleged by some, says Dr. Robert

Hamilton, that, as other powerful medicines had frequently been joined to the calomel, the cure might, with greater probability, have depended upon them than the mercury. He candidly acknowledges, that he always deemed opium of the most essential service, by relieving pain; and allows that he thought the emetic tartar and camphor sometimes contributed to the cure. But he pointedly remarks, that he had very often seen cases where emetic tartar, camphor, and opium, assisted by saline remedies, had been employed without the smallest relief in inflammatory diseases, which, nevertheless, gave way in a short time, on calomel being added. And he states, as a fact well known at Lynn Regis, that calomel and opium had very often succeeded without any other addition, from the first exhibition of mercury there to the then present time, in inflammatory diseases; and that even with the additions above named, many inflammatory diseases showed no amendment, until the salivary glands were affected, a circumstance which was generally regarded, by himself and other practitioners, as the happiest presage of recovery. He concludes his summary account, by declaring that the subject of it is not the hasty result of a few months' practice, but that it is founded on the solid basis of nearly eighteen years' successful experience, to which many of the principal practitioners of the town where he resided, could bear the most ample testimony.

The above is an imperfect abridgement of the

paper originally published by Dr. Robert Hamilton,* which, notwithstanding some of its defects, deserves to be engraven in letters of gold, on account of its great practical application and utility. The defects alluded to are, that both the lancet and purgatives, at the outset, appear to have been used too sparingly by the author; and that the doses of calomel recommended were either too small, or too seldom repeated. At least, if my experience has not greatly deceived me, his method of cure, if strictly followed, would often be inefficient in highly acute cases, which obviously require, by reason of their rapid progress, a more powerful and prompt application of remedies. Still, however, it must be confessed, that his principle of the successive use of bleeding, of purging, and of calomel and opium deserves to be deeply regarded and highly admired; and so far as he advanced in the treatment of common membranous inflammation, that, until some greater discovery be made, perhaps little more can be done than to modify the application of his measures. That many an invaluable discovery in physic has not been duly appreciated during the life of the author, and that this was the case in respect to the one adverted to here, can hardly be doubted by any conversant in medical literature. Accident often appears to produce some fact capable

* See, in Medical Commentaries, for the years 1783—84, vol. ix. p. 191, a Letter from Dr. Robert Hamilton, Physician at Lynn Regis, to Dr. Duncan, giving an account of a successful method of treating Inflammatory Diseases, by Mercury and Opium.

of great extension, and although repeatedly observed by many, yet it can only be generalized by a mind accustomed to contemplate impressions; as the falling of an apple is said to have led Newton to the discovery of the laws by which the heavenly bodies are regulated. It is only right to acknowledge that some enlightened authors, and also some respected friends whom I could name, inferred the general anti-inflammatory power of calomel and opium from their own observation, so that their testimony might be brought to support Dr. Hamilton's doctrine. If most of his contemporaries failed both to extend the usefulness of his researches, and to do justice to his deserts, yet he will surely be ranked among those who have proved real benefactors to mankind; since the time is rapidly approaching when, in every department of philosophy, bigotry and prejudice will give way to liberality and truth.

In what are called idiopathic fevers, in those fevers in fact which commence without any decided signs of topical inflammation, and which advance under a continual excitement, calomel should be given from the first as a purgative, determined to the bowels by some other auxiliary: because free purging by lessening this excitement daily most frequently wards off inflammation, and where in despite of it, inflammation does occur early, then general or local bleeding should be subjoined, and calomel so managed as to produce its specific as well as purgative influence; but where the inflammation arises at a late period of

the excitement when the general tone of the system has been exceedingly relaxed, it will mostly be better to avoid bleeding altogether, and to trust to the other measures assisted by blisters. There is, however, an intermediate stage, one between the first and the last, in which inflammation is apt to arise, and in this local bleeding is often highly advantageous, even when contagion has been the exciting cause; and where the fever has originated from cold or any other common cause, general bleeding to a moderate extent is sometimes highly beneficial, because the fever at that time is attended with less relaxation than would have been the case if it had arisen from contagion. But in continued fevers which are complicated with inflammation from the first, it will be best, when sufficient depletion shall have been premised, to administer calomel as a purgative and specific at the same time. In such affections, indeed, the shortest and most certain way of procuring the specific, is through the purgative operation of calomel, for the high excitement resists the agency of calomel, and the intestines are usually so lined with morbid mucus as to prevent its absorption, unless this mucus be brushed away, by purging, from the mouths of the absorbent vessels. One large or two tolerably free doses of calomel, therefore, may be administered in the day, followed up by some other aperients, to induce plentiful evacuations before bed-time; while to accelerate its more complete absorption, during the night it may be given in divided doses, com-

bined with opium where there is pain in the chest or belly, or much general irritation. Some have contended, that opium is dangerous in inflammatory diseases, inasmuch as it might mask the symptoms, and lull the practitioner into a false and fatal security. But this reasoning is more specious than solid, for after sufficient depletion, no remedy has appeared to me more efficacious. Every attentive practitioner must have remarked, that in many inflammatory affections, where the lancet and purgatives have been boldly applied, great universal irritation succeeds, which may sink the patient if not timely allayed. For this species of irritation opium is peculiarly fitted, generally calming the turbulence of the system, and inducing tranquil sleep. Yet as a subdued degree of the topical affection is frequently combined with this irritation, it is most prudent to combine the opium with calomel, a combination which obliterates every vestige of topical disease, by equalizing the circulation, and also by inducing in some instances a peculiar relaxation of the whole habit.

While the system continues under the full influence of the fever, while the skin continues hot and the pulse quick, ptyalism is not easily produced, and the most timid may then give calomel with far more freedom than in those diseases unattended with a hot skin and a quick pulse. But as soon as ever the fever begins to decline, calomel should be given most cautiously, because as the system is then verging towards its natural state,

its specific action will be more readily induced; and where during the continuance of the fever, it either acts freely on the skin or kidneys, while it keeps the bowels soluble, the practitioner need not be impatient about the appearance of ptyalism; for the modus operandi of calomel is to equalize the distribution of blood, to restore the natural balance of the circulation by communicating a power to the capillary system of vessels, which enables them to resume their secretory offices as before. When calomel is prescribed, even in conjunction with opium, it sometimes acts more forcibly on the intestines than desirable, producing many copious dark stools, followed by small, frequent slimy or bloody discharges. Whenever these occur, the bowels should be cleared by a moderate dose of cold-drawn castor oil in the first place, and then opiates with mucilaginous drinks will speedily remove the irritation. When opium is given expressly to diminish pain or irritation, the first dose should be tolerably large, say two or three grains, and the subsequent ones of course may be smaller. But it must be constantly remembered, that opium ought not to be exhibited in visceral inflammations, until an impression has been made by free evacuations; except indeed where there is excessive pain, and then it may often be used with great advantage in conjunction with venesection, particularly in inflammation of the bowels. In some affections of the abdomen, attended with spasm of the intestines, or with unusual irritation, I have occasionally

found it impossible to move bowels, without the previous exhibition of opium. In such cases, about a drachm of the tincture will often do very well, made with two ounces of mucilage into an enema, which should not exceed that measure, else it will not remain long enough to produce a proper effect. When opiates fail in allaying the pain or irritation, the tepid bath sometimes proves highly beneficial, especially after depletion by the lancet and cathartics. If a warm and universal perspiration break out soon after its use, and continue for some time, it is generally a most favourable sign, few cases having been fatal in my practice where it occurred. When calomel and opium do not excite perspiration, the opium may be omitted, and the compound powder of ipecacuan sometimes substituted with great advantage, for this preparation, added to the calomel, often powerfully determines the blood to the surface.

In inflammatory diseases, the doses of calomel and opium should be varied according to the nature and seat of the symptoms, as well as the precise effect intended to be produced: for an extremely violent acute, or a protracted sub-acute inflammation, by more immediately endangering structure, requires a more powerful practice than an ordinary degree of the one, or a short duration of the other; while some organs are so peculiar in their functions as to demand an exclusive rule of treatment, an exception from the general mode of administering the remedies. If the brain be inflamed, calomel ought to be prescribed in

full, and often in frequent doses with other brisk purgatives, because this is the best mode of moving the bowels effectually, while it affords the only chance of procuring the specific action of the mercurial; and as for opium, it should be entirely omitted until the force of the topical disease has been subdued by proper evacuations, and then it will only be necessary, where it is an object to allay irritation. Sydenham was in the habit of giving opium in the advanced stages of cerebral affections to quiet the irritation which so often then supervenes; and certainly at that period, even where cerebritis had previously existed, it frequently proves useful, though it must always be given with the greatest caution at first, till we fairly ascertain its influence. Opium has a specific influence on the circulation of the brain, so that we cannot beforehand always estimate its effect, but as calomel modifies its action, and at the same time determines it to the skin, it is safest in doubtful irritations of the cerebrum to give them combinedly. In those fevers which arise from contagion, the whole nervous system undergoes some change, which is inexplicable in the present state of our knowledge; yet whatever this change may be, it requires, not only that opium should be much more guardedly employed than in ordinary fevers, but that calomel should be given as an aperient, from which great advantage will almost always be derived, and the more so where its purgative leads to its specific operation. When

topical inflammation has its seat in the chest, the doses of calomel should be so moderate as not to harass the patient by too repeated purging, which is generally prejudicial where the mucous membrane of the bronchia is affected; and on the other hand, the doses of opium should commonly be small, lest they distend the vessels of the head, and thereby disturb the action of the lungs, through the consent existing between them by which nerves originate in the brain. It is always desirable to promote diaphoresis in inflammatory affections of the chest, and therefore James's Powder may often be beneficially combined with the calomel and opium. In abdominal inflammations, particularly if they be seated in the peritoneum, or in the parenchyma of such organs as the liver and kidneys, the doses of calomel should be sufficient to maintain a free action on the bowels, and if possible to affect the system at the same time; but here the doses of opium should be considerable, wherever much pain exists, for if the tongue be at all soft and moist, opium may be regarded as one of the most efficacious agents in abdominal inflammations, especially if the pain be circumscribed. But when the tongue has been hard and dry in abdominal inflammations I have rarely seen much benefit from opium; and this state of the tongue is much more liable to occur in contagious than in common fevers. In some violent cases of visceral inflammation, I have given, with great advantage, a scruple of calomel with

about two grains of opium for the first dose, and afterwards small and repeated doses of both; whereas in other cases, from five to eight or ten grain doses, with about one grain of opium every six hours for the first day, and in half the quantities afterwards, excited ptyalism the soonest; and sometimes the most speedy effects have been formed, after suitable depletion, from two or three grains of calomel about every second hour, with a dose of opium now and then. It is fortunate where acute or sub-acute inflammation at once yields to the united influences of bleeding and purging, blistering, and anodynes, for then of course no subsequent treatment is necessary; but as far as I have observed, these measures often fail completely to eradicate the inflammation, and leave a kind of subdued degree of it, which has a tendency to produce organic derangement; so that we not unfrequently see persons who drag about diseased bodies for years, and who refer the origin of their chronic ailment to the *dregs* of the violent attack formerly sustained. The immediate relics of acute and sub-acute inflammation have so given way to the opportune use of calomel and opium, where the reduced condition of the patient precluded further evacuations, that I cannot but urge this as an additional reason in favour of the practice here recommended. All the precautions, however, before urged with respect to regimen and rest, should never be lost sight of, if we wish to avoid the insidious underminings of chronic after acute or sub-acute diseases. In typhus and si-

milar fevers low degrees of inflammation are often kept up by the continued operation of the specific cause maintaining an increase of the heart's action. In such cases, when calomel is given so as to purge daily and at last to produce slight ptyalism, the result will generally be favourable: this is the mode which I have often successfully pursued in the Fever Institution, where the lateness of the admission precluded blood-letting; but in very weak habits, in which much nervous irritation existed, I have prescribed calomel as a purgative only, for reasons which were before stated.

As far as the constitutions of patients are concerned, mercury is most suitable to the robust. Hence in general it is better borne by males than females, by the active than the sedentary, by the well than the badly fed, and hence, too, in general it is also better borne by the hardy inhabitants of the country, than by their degenerate offspring who have constantly resided in large crowded cities. Whatever decidedly creates the nervous temperament, whatever renders the body highly sensitive, most certainly makes patients less capable of sustaining mercury as an alterative; and when such, therefore, labour under fever, it will for the most part be adviseable to give calomel simply as a purgative; for in them if it be pushed on to produce any thing like ptyalism, it will frequently occasion a tremulous tongue, an irregular action of the heart, and other symptoms of high irritation. In the febrile complaints of infants,

too, for the most part calomel should only be prescribed as a purgative, because they partake of the nervous temperament by having an exalted sensibility. For the same reason, in those secondary fevers which come on when the subjects of them are weak and emaciated from the previous attack, calomel ought only to be given as an occasional cathartic, when the bowels are loaded; but the excitement having been once lessened by evacuations from that quarter, moderate doses of opium will often answer an excellent purpose. It was formerly noticed, that mercury was improper as an alterative in that external species of erythematic inflammation which attacks emaciated subjects just as they are convalescent from a protracted fever; and the same remark is applicable to internal inflammations occurring in constitutions, the strength of which has been broken up by any other cause whatsoever; for in them mercury produces an extreme relaxation and irritation which they cannot sustain, and indeed they are far more fitted for the tranquillizing operation of opium. But there are two interesting diseases concerning which a few remarks shall be subjoined, as calomel has been found useful in the one, and opium in the other, and as they have either a relation to arterial inflammation, or to venous congestion.*

* In another treatise I have expressed it as my full conviction, that mercury is much abused in chronic diseases, to which it has certainly been too universally applied; but I cannot refrain from mentioning here, that my friend Dr. Ayre, in his excellent treatise on Marasmus, has introduced a substantial improvement in the mode of administering mercury in chronic affections of the liver, the minute doses which he recommends being generally preferable to ordinary ones.

INSANITY.

INSANITY.

MANIA is either a primary or a secondary disease. It is primary when the brain is the organ first and decidedly affected; it is secondary when the brain is affected from some distant disorder. Like apoplexy, too, it is either acute or chronic, and also marked by venous congestion or by arterial excitement. In several cases, I have seen mania ushered in by the strongest signs of cerebral congestion, while the tone of the heart was extremely oppressed, the face very pale, the pupils dilated, the hepatic secretions disordered, and the skin cool and relaxed. Whereas in other instances, I have observed mania to commence under what we term an excessive determination of blood in the arteries, with swollen, reddish face, ferrety eyes, full bounding pulse, and preternatural heat of the surface, but especially of the forehead and hairy scalp. In the congestive variety, patients often complain a little before the attack of a load or confusion in the head, with an oppressed or heavy feeling at the heart or epigastrium; and in the excitive variety, patients often complain of a pulsating pain or fulness in the head, while the action of the heart is increased both in force and frequency, without any sense of weight or oppression there. These two varieties are evidently of

the acute kind, and indeed sometimes pass into each other; the symptoms of congestion appearing first, and those of excitement afterwards, as is observable in many fevers. In one gentleman in particular, who had been thrice a patient of mine within five years for separate attacks, the mania was always preceded by the most manifest indications of venous congestion in the brain; for the oppression was so great at each attack as to border upon apoplexy, while there was an impeded pulse, a cool skin, and a pallid face, with glairy eyes. But as soon as the pressure of the venous congestion was removed, by the use of the warm bath, of the lancet, and of purgatives, an excessive determination of blood took place to the head, attended with fever; and though the blood drawn when the symptoms of venous congestion were present never exhibited the buffy coat, yet it generally did so when abstracted after the arterial excitement had occurred. In this case, the functions of the liver were always disturbed with those of the brain, and I have seen others in which the former organ was still more deeply implicated: but though an affection of the liver be common it is not an invariable and a necessary concomitant of either of these varieties of mania; and the affection of the liver as often follows as precedes that of the brain, so that in one instance it shall appear to be an effect, and in another a cause of the morbid conditions on which insanity depends.

When an affection of the liver, or indeed of any other remote organ operates on the brain so as to

produce ultimate madness, this operation is not direct but indirect; for the affection of the remote organ proves an irritant to the heart, the increased action of which excites the mania, by propelling the blood too powerfully towards the brain. Or the return of venous blood being interrupted through the remote organ, as may happen in cases of congestion of the liver, the circulation of the brain is thereby mechanically affected, and madness succeeds; and the common observation of every day may convince any one how much an obstruction in the liver influences the brain, since those in whom it exists are seldom free from pain, or some other uneasiness in the head. It would be extremely useful to have a more impartial account than we have at present of those diseases of the head and other parts which mutually influence each other; for what are sweepingly called the digestive organs have lately occupied so exclusive an attention in the doctrine of sympathies, as to have shut us out from a comprehensive view of the subject. An irritation may be established in the head and affect the digestive organs, it may be established in the latter, and affect the former; or it may be established in the chest or even in an external part, and ultimately affect the head and digestive organs either separately or combinedly. But in all these cases, we find the first effect of the irritation is to disturb the heart's action, and that disturbance produces disease in other parts which had been previously disposed; though when a combination of local irritation exists, it is some-

times difficult to trace the order in which the various affections arose out of each other. Whenever however an irritation arises in any one who has an hereditary or acquired tendency towards a particular disease, that irritation should always be attended to as early as possible; for if it be neglected, the particular disease will be always most sure to supervene, and it was once in this way, that I saw madness follow a disregarded disorder of the skin.

The above view of mania seems to presuppose, that there must be some antecedent disposition in the brain, else why should an affection of the liver, for example, lead to madness in some persons and not in others. The more we inquire into the history and pathology of diseases, the more we shall be convinced, that latent and local predispositions determine the seat and character of the symptoms; for though those predispositions may exist under ordinary states without producing disturbance, yet when the system receives any shock, the effects of that shock will be concentrated in the weakest part. It is thus, in numerous individuals exposed to the same exciting cause, that in one the brain shall be affected, in another the lungs, and in a third the stomach, and so forth; because before the occurrence of the palpable disorder, these organs had severally been predisposed, and they only became diseased by the circulation of the blood having been disturbed from some increase or decrease in the action of the heart, or from some mechanical impediment

to the free transmission of blood. What we call increased determinations of blood to particular parts are in general merely obstructions in the smaller vessels, by reason of which the blood cannot be so readily returned through the veins; so that the currents of blood transmitted by the heart through the larger arteries, continue to accumulate in those arteries, which accordingly become more distended than others, but the action of which is not more frequent; and indeed observation on the pulse in various places at the same moment will convince any one that the action is the same in all the arteries, our common language on the subject being figurative and incorrect. Local determinations of blood, as above explained, are very conspicuous in many diseases, but in none more so than in mania; and where an obstruction in the capillaries of the brain exists simultaneously with an increased action of the heart, both the carotid and temporal arteries are often excessively distended with blood.

The acute attacks of mania, congestive as well as excitive, are often so formidable, that there is immediate danger from the pressure of the venous congestion or of the arterial excitement; so that they both require, at their commencement, a treatment similar to that of the congestive or excitive apoplexy, according to the character of the symptoms. These attacks are sometimes so sudden, as to require the greatest promptitude to save the life of the patient. Some years ago, I attended a gentleman who was labouring under hepatic dis-

ease, with some threatenings of insanity, and he was so suddenly seized with an apparent apoplexy of a violent kind, that he must have shortly expired, if the family surgeon and myself had not been present. He was walking backwards and forwards in the room in an agitated manner, as he had done for some days previously, when all at once the attack came on, and he fell down in a profound apoplexy. Without the loss of a moment of time, we plunged the lancet into the main branch of the temporal artery, and by abstracting thirty ounces of blood seemingly prevented his death. But soon after this period, the madness was manifestly developed, and it required a regular course of medicine before it was perfectly removed.

Sudden or excessive abstractions of heat from the skin, the depressing passions, sedentary employments, and indigestible food, are causes which often lead to the congestive variety of acute mania; while the excitive variety is often produced by exposures to a high temperature, by strong emotions of the mind, by stimulating drinks, and by intemperance in diet. It has been said, as a bitter national reproach, that the one half of the people of Great Britain is scrofulous, and the other half mad: and there is perhaps a much nearer affinity between these two diseases than writers on the subject have generally seemed aware; at least in many families where madness prevails hereditarily, there scrofula also prevails, and has prevailed. Both the causes of scrofula

and madness are frequently to be found in the vicissitudes of our climate, and in the mixed or irregular diet which we adopt, together with the use of wine and spirits. It is exceedingly to be regretted, that the mode of living amongst the higher orders, who influence the habits of the middle and lower, is daily becoming more complicated; and this is the case not only with regard to diets, but also to drinks, for both the dishes and wines are now more numerous and varied than formerly. Next to the abuse of animal food and wine among the higher, is that of spirits among the middle and lower classes of society: for numerous acute and chronic attacks of the brain, and of other vital organs, are distinctly attributable to such unnatural stimulants incessantly increasing the action of the heart; so that the blood is circulated more rapidly than was designed in the constitution of our nature, and the weakest organs are consequently liable to become diseased. If madness be hereditary in any family, it is often induced by the daily use of wine or spirits; and indeed eating largely of animal food has a similar effect, as I have sometimes seen strikingly exemplified. Man is not only more complicated in his animal enjoyments as he advances in civilization, but he is also more liable to mental agitations, when actively engaged in the world; and it is perhaps owing to the operation of these two causes, together with the variableness of our atmosphere, that madness is so common in Great Britain. But it is time to pass on to the descrip-

tion of the more chronic forms of mania, which are frequently excited by such causes as have just been enumerated.

The chronic forms of mania steal on insidiously for a long time, before the subjects of them can be pronounced positively insane. The one which arises from a strictly congestive state of the brain, is preceded by paleness of the face and skin, by watchfulness and restlessness, by some feeling of uneasiness in the head, by an occasional load at the region of the heart, and by more or less derangement in the hepatic secretions. The pulse is almost always weak or oppressed during the day, and the surface often damp with a cold perspiration; but the pulse frequently becomes fuller and quicker towards the evening, from the accession of a short and imperfect excitement, in which the skin is generally hot in some places and cool in others. Dejection of the spirits is usually among the first symptoms, together with a want of regular sleep; and next some defect of memory appears, with dulness or confusion of the intellect, a marked change in the eyes almost like a squint, and a tendency to deviate from accustomed habits and pursuits. When these symptoms have continued a certain period, the patient has frequently some threatenings of apoplexy or epilepsy, and, if the effects of these should not prove fatal, at length he becomes clearly deranged; but about this time, especially if depletion be used, the appearances of general oppression subside, and the pulse grows full and

strong, with other evidences of excitement, especially about the brain. Not long since, I was consulted for a gentleman who had recently sustained an attack of apoplexy, and who did not apparently throw off its consequences so readily as his friends had expected. He conversed with great rapidity upon a variety of subjects, and though he said nothing that was strictly incorrect on any, yet his general manner indicated some affection of the brain. On inquiring particularly into the history of his case, I found that for more than three years before the attack of apoplexy, he had been subject to swimming in the head, and an uneasy sensation under the ribs of the right side whenever he was on horseback. These symptoms alone led me so suspect, that some insidious mischief had long existed in the brain and liver; and I became confirmed in this opinion, by ascertaining, that he gradually became pale and shrunk soon after the forementioned time, lost his spirits, and had been subject to sudden, lancinating pains in the joints. A few days from the commencement of my attendance, a violent attack of mania supervened; but in about two months afterwards a favourable change took place under an active treatment, though some months afterwards he died of another attack. Other cases of a similar nature might be adduced to show how secret and concealed the approaches of insanity may be, before the developement of the decided disease; and indeed this is so much the case, that we should never treat with indifference any example which wears the

least character of hypochondriasis, for patients hardly ever complain without reason.

The other chronic form of mania, which is connected with arterial excitement, is generally preceded by uneasiness in the head, by some heat of skin and some quickness of pulse particularly at nights, by watchfulness or short disturbed sleeps, and yet, what is remarkable, the strength is increased. As the morbid train of phenomena advances, the patient becomes more irritable, and often extremely suspicious. A sensible change takes place in his demeanour, and even in his moral character, so that, compared with what he formerly was, he appears like a different individual. Sudden and uncommon attachments or aversions are now often formed, and expensive or parsimonious habits pursued, inconsistent with the former conduct, or with the present situation of the patient. Unfounded fears or strange fancies arise, and what pleases at one time offends at another; and during the progress of these symptoms, the memory may be observed to grow more defective and confused. In this, as in the other chronic form of mania, the liver is very liable to be diseased.* But on many occasions it is difficult to say whether the liver is primarily or secondarily affected; but in chronic diseases of the brain in general, I am disposed

* In the London Medical Repository, Dr. Burrows of London published an excellent paper on Insanity, about the same time that the first edition of this work appeared; and it gave me much pleasure to find, that my opinions, respecting the morbid conditions of the liver in this disease, so strongly coincided with those of that enlightened pathologist and practitioner.

to believe, from my own observations, that the liver is more often secondarily affected, than many modern authors seem inclined to believe. In the course of my experience I have seen several cases of chronic diseases of the brain originate insidiously from blows or other injuries applied to the head; and in the progress of most of these, the functions of the liver became more or less vitiated, though they had been natural previously to the occurrence of the accident. Chronic affections of the brain are often seen so indistinctly denoted for a considerable period, that we not unfrequently mistake merely sympathetic disorders of the digestive organs for them; and in proof of this I have seen some remarkable dissections where prior to death the stomach had been deemed the sole seat of the disease, and yet that organ was sound, and the brain exhibited much derangement. Even slight injuries inflicted on the scalps of adults by falls, blows, or the like, when neglected at first, often lead to chronic inflammation of the dura or pia mater, and sometimes even to madness, as I have myself witnessed; and such accidents, therefore, should always be attended to at their occurrence, and even for some time afterwards, for moderate depletion, followed by an antiphlogistic regimen, may prevent a great deal of mischief. An old lady was once placed under my care for insanity, but she was so speedily removed by her friends to an asylum, that I had not time to investigate her case: and I was credibly informed, that when she died soon afterwards, a fracture was ac-

cidentally discovered in the skull, which had till then, unfortunately, escaped observation. Such cases should teach us the utmost caution in our inquiries into the causes and symptoms of insanity: and it certainly does appear to me, that injuries of the head more frequently excite the chronic forms of this disease than is suspected; but this is more especially so in those cases which depend upon slow arterial excitement, and the history of which I have imperfectly sketched. In cases of this nature, there are sometimes also such unequivocal signs of apoplexy, near the time of the attack of madness, that copious depletion is required; but if such cases be traced backward for some time, a precursory train of symptoms may always be discovered which had led both to the apoplexy and to the madness.

It will have been perceived, that I consider insanity as the effect of some disorder in the circulation, whether produced by agencies of a corporeal or mental nature. It might be shown by familiar facts, that the brain is the principal organ through which the operations of the mind are perfomed; and it does not, as many have supposed, necessarily involve the doctrine of materialism to affirm, that certain disorders of that organ are capable of disturbing those operations. If the most skilful musician in the world were placed before an unstrung or broken instrument he could not produce the harmony which he was accustomed when that instrument was perfect, nay on the contrary, the sounds would be dis-

cordant; and yet it would be manifestly most illogical to conclude, from such an effect, that the powers of the musician were impaired, since they merely appeared to be so from the imperfection of the instrument. Now what the instrument is to the musician, the brain may be to the mind, for aught we know to the contrary: and to pursue the figure, as the musician has an existence distinct from that of the instrument, so the mind may have an existence distinct from that of the brain; for in truth we have no proof whatever of mind being a property dependent upon any arrangement of matter. We perceive, indeed, the properties of matter wonderfully modified in the various things of the universe, which strike our senses with the force of their sublimity or beauty; but in all these we recognize certain radical and common properties, that bear no conceivable relation to those mysterious capacities of thought and of feeling referrible to that something which, to designate and distinguish from matter, we term mind. In this way, I conceive, the common sense of mankind has made the distinction which every where obtains between mind and matter; for it is natural to conclude, that the essence of mind may be distinct from the essence of matter, as the operations of the one are so distinct from the properties of the other. But when we say, that mind is immaterial we only mean, that it has not the properties of matter; for the consciousness which informs us of the operations, does not reveal the abstract nature of mind, neither do the

properties reveal the essence of matter. When any one, therefore, asserts the materiality of mind he presupposes, that the phenomena of matter clearly show the real cause of mind, which as they do not, he unphilosophically places his argument on an assumption; and his ground of reasoning is equally gratuitous when he contends, that mind is an attribute of matter because it is never known to operate but in conjunction with matter, for though this connexion is constantly displayed, yet we have no direct proof of its being necessary. If a person, as Cicero beautifully supposes, had been educated from infancy in a chamber where he had only seen the light through a small chink, he would have been apt to consider this chink as necessary to vision; and so it may be in regard to our corporeal organs, which so far from being necessary to mind, may even limit the range of its operations, like so many chinks in the walls of its prison. But granting that mind was material, it does not logically follow that it is destructible, for it were just as easy for the Deity to make matter as spirit immortal. The fact is, that the belief of the immortality of the soul has little to do with the question of its materiality or immateriality, for this almost universal belief results from our moral constitution, and is, perhaps, intimately associated with the first principles of our nature; and surely no man, who marks the benevolent designs of the Deity in the external world, and who is deeply imbued with a love of the human race, could wish

to consider the hope of a future existence as vain and visionary. Matter does not perish, for what appears to be its destruction is only a change of its form; and as mental operations cannot be resolved into material substances, why should any one imagine, that mind, with all its superior attributes, perishes, when the very dust upon which we tread seems to be everlasting? Madness is indeed an awful malady, and might at first sight convey an impression, that mind itself was liable to the changes and decay of our material structure, but it surely only shows the intimate connexion which it has with matter; for I have seen no case of this disease in which there were not previously the most distinct evidence of some disorder in the brain to which the madness might be referred as a consequence, without supposing that mind was abstractedly diseased. It were needless to object to this doctrine, because madness is often produced by mental emotions. Those emotions never act directly but indirectly, by having a most powerful influence over the action of the heart; and if we reflect, that the action of the heart in its turn has great influence over the circulation of the brain, we shall be at no loss to account for madness on the principles here maintained.

If these premises be correct, to restore the organ, through which the mind chiefly operates, to a sound condition will be the best way to remove madness. It would amount to little to contend, that it will be of no use to restore the natural state of the brain, while the mind itself

may continue to influence it morbidly; for we might as well say, that the effect produced on the brain by a blow should not be removed, because it may be re-produced by the repetition of the blow. It often happens after such an injury, that the disease induced remains for some time: we evidently perceive, then, that as the injury is not renewed, it is simply the continuance of the effect; and so it may be in many cases, when the disorder of the brain is produced through the medium of the mind. For the effect remaining, in the latter instance, does not show, any more than in the former, that the state of the mind continues to maintain the morbid action of the brain which it originally induced: and granting that it should, it would still be of considerable advantage to counteract its influence by proper remedies, lest it might derange the structure of the brain, and thus not only render the madness permanent, but shorten life. Indeed, in every case of mania, it will be equally necessary to remove, as far as possibly can be done, every thing from the mind, as from the body, which has produced, or is likely to produce, an injurious effect.

The preceding, it is readily allowed, is a very imperfect and faint outline of the pathology of the various modifications of madness; and it should not have been drawn here, but for the purpose of exhibiting a method of treatment which, if it should prove as successful in the hands of others as it has been in mine, will contribute to lessen the duration and fatality of this awful disease.

But before proceeding futher it will be necessary to state, that I considcr madness generally remediablc in its commencement, and most frequcntly incurable when it has existed for some time. The special grounds upon which this opinion is founded are briefly thcse:—in the commencement, madness is maintained by functional disordcr only; but when it has existed for some time, that disorder has generally produced either such a change of structurc, or morbid condition of the vessels, in the brain, as does not usually admit of removal. The indications of functional disordcr were clear and indisputablc in thc beginning of every instance of mania, which has fallen under my care; and when I have been able to remove that disordcr, sanity of mind has gencrally succeeded. It is, however, but candid to confcss, that I have traced the history of somc cases, in which, the first signs of disordered action disappcaring, the circulation *seemed* to be restored to a natural condition, and yet there was no abatement of the mental malady. Still such cases do not overturn the opinion here advanced; for even in thcm it is most probablc, that the primary disorder in the circulation had effectcd somc morbid change in the brain, by which the madness was confirmed. In this most complicated and mysterious organ, very slight changes would be equivalent to such an effect, although they in gencral left the bodily hcalth unimpaired. In threc examples of this nature, I found after death some small ossifications in the meninges, with more serum in the ventricles than

common; and I have never seen the brain of any patient, who had been insane, perfectly natural on minute examination. Besides, in long-continued cases of madness, it does not follow that because the blood appears to flow naturally along the radial and other external arteries, every other part of the circulation must be in a healthy state. Many large tumours form on the surface of the body without ever affecting the pulse; and if such irregularities can thus occur externally, why may not certain derangements exist internally, without being indicated by the pulse? Nay, we do know that the heart itself, the very centre of the circulation, occasionally suffers certain degrees of morbid change without disturbing the pulse; and can we wonder if something similar should take place in regard to the brain? Can we be surprised, after the first congestions or determinations have subsided in mania, that they should leave effects sufficient to prolong the disease, even when the pulse at the wrist and elsewhere seems to beat naturally? In the circle in which the blood revolves, local interruptions may be induced, of which the pulse gives no information, from the heart's action not being thereby disturbed.

In those cases where madness comes on suddenly, and is connected with great fulness in the vessels of the head, the immediate pressure must be promptly relieved, at the very onset, by free bleeding and purging; otherwise the patients will be either in danger of dying, from venous congestion or arterial excitement of the brain, or they

will be extremely liable to permanent alienation of mind. In the simple apoplexy, when you can succeed in overcoming the first powerful impulse, for the most part all the urgent symptoms soon disappear, but it is not so with madness; for when you have reduced the force of the cerebral congestions or determinations, it will commonly be found, that they have produced or are connected with an affection of the brain, which is still to be erased before convalescence can be accomplished. On this account, it will generally be necessary to persevere for some time in the occasional use of local blood-letting, purging, and blistering, combined with a regular course of mercurials: but after the pressure of the congestion or excitement has been evidently mitigated to a considerable extent, depletion by the lancet should be cautiously pursued; since if it be carried too far it occasions a nervous irritation which acts powerfully on the heart, and which may protract or confirm the disease, and finally exhaust the powers of the patient. In the first two weeks of the attack, I have usually bled both from the arm and the temporal artery, until the fulness of the vessels of the brain was relieved, and the action of the heart restored to a more natural state; yet at the same time the bowels were evacuated by calomel, jalap, and the sulphate of magnesia, the calomel having been given in full doses to procure its alterative as well as its purgative operation. After that period, it has been my usual practice to draw blood by leeches or by cupping about twice a week, to order a saline

purgative about every second morning, and to give calomel daily in such doses as to insure a moderate but constant ptyalism for some time. When the last mentioned effect has been procured it has been customary with me to apply blisters occasionally to the shaved scalp; and in some instances, they appeared very beneficial, where they did not act as irritants to the heart. It is worthy of remark, that at least two-thirds of the cases of madness which I have attended, *in a recent state*, recovered within the first three or four months, under this treatment; though hardly any of the patients showed signs of convalescence until the mouth had been affected about three or four weeks by the mercury, and until some degree of emaciation took place. It is occasionally a very difficult matter to induce ptyalism in mania, and whenever this is the case it is an indication that evacuations are required, which always tend to render the system pervious to the influence of mercury. When ptyalism, however, is once induced in mania, it may be easily kept up by moderate doses of calomel or of the blue pill, or by mild mercurial frictions; and the last mentioned may often be used with good effect where the two former preparations disagree with the stomach or bowels. After sufficient evacuations had been premised, I have often combined small doses of opium with the alteratives; and wherever there was much nervous irritation, this combination always appeared more or less beneficial. Probably some narcotic will be discovered, which will greatly extend

our influence over those cases of mania attended with excessive irritation of the nervous system.

On the first occurrence of those cases of mania, where clear evidences of constitutional excitement existed, I have seen the shock of a cold shower-bath sometimes useful; but much harm may be done by persevering in such a measure when the tone of the heart and arteries has been subdued, for it then may increase or occasion fulness in the vessels of the brain, confirm the insanity, or induce an attack of apoplexy, of palsy, or of epilepsy. When, however, there is at any time an excessive determination of blood to the brain, or when the maniacal paroxysms become severe, cold stupes may generally be applied with great advantage over the whole head, secured in the form of a night-cap, that they may remain on; and under such a state of things, the head should always be raised very high, in order to retard the flow of blood by the arteries towards the head, and to accelerate its return by the veins, a circumstance which is highly important in many severe affections of the cerebrum. In those case which are strictly congestive, the cold affusions cannot be safely employed; but the warm shower or slipper bath may be beneficial, in combination with depletion, by contributing to allay irritation, and to equalize the circulation. Where the mercurial course, with the means before mentioned, has failed to remove all the symptoms of insanity, I have generally persevered in the use of the warm or cold shower bath, with tolerably active purga-

tives; and when this treatment has been regularly pursued for some time, it has rarely disappointed my expectations, where the disease had not been of long standing before the previous application of the depletory and alterative measures. Some experienced practitioners, whom I know, have found considerable benefit from occasional emetics of antimony, but I cannot speak of them from my own observation in this disease.

The more chronic cases of mania, which steal on insidiously in the way before described, may be most frequently cured, if early encountered by bleeding, purging, and mercurials; but if they be allowed to proceed until fully developed, they will almost always prove less manageable than the acute forms. Sudden irregularities in the circulation arrest our attention at once, and may often be overcome without leaving any traces but what are removable by judicious means; but slow congestions or excitements sometimes make deep and indelible impressions, before any serious mischief has been suspected. When, however, the insidious modifications of mania have been neglected until the decided attack has taken place, the same plan of treatment must be pursued as in the more acute varieties, with this exception, that the general depletion should not be carried so far; and even under circumstances apparently so unfavourable, I have known the steady perseverance in this treatment effect a cure, even when the precursory symptoms had been stealing on for two or three years. Upon the whole, therefore, I could wish, that the

agents which I have advised combinedly or successively in mania, were fairly and extensively put to the test in the practice of others; for I must again repeat, that if they should prove as successful in their hands as they have done in mine, they will contribute to lessen the duration and fatality of this awful disease. There is an efficacy, it appears to me, in the conjoint use of bleeding, purging, and mercurials, which has not yet been fully estimated in the early stages of mania: and as where these measures fail at that period, the subsequent employment of the shower bath and purgatives will yet succeed, an encouragement is surely held out to give this plan an impartial trial. Yet it is only right to acknowledge, that my experience has not been extensive in mania, and therefore the treatment recommended is probably far too limited to be applicable to all the forms of the disease. The cases which fell under my inspection mostly occurred in robust patients who had lived irregularly, and who were well suited for free depletion in the first instance, and for purgatives and mercurials afterwards.

The few cases of melancholia which I have seen were connected with congestion of the brain and liver, and in them the tepid bath and purgatives, with calomel and opium, proved highly efficacious: but it should be remembered, that whenever the brain labours under an accumulation of blood either in the rise or progress of mania or melancholia, the lancet must be promptly employed; for when this measure is neglected, apo-

plexy or epilepsy often supervenes, or the structure of the brain is so much injured as to render the disease irremediable. When convalescence from mania has once taken place, the diet in general ought to be extremely abstemious afterwards, even during the whole period of life; for I have seen several relapses which were evidently occasioned by eating too much food; and this is a point which requires the more attention, as the appetite is often keen on the subsidence of mania.

But those who have attended much to the phenomena of an existing mania, must have observed that though depletion and the antiphlogistic regimen may be indispensable in the beginning, yet patients require to have regular supplies of light nourishing food, during the progress of the disease. If they be neglected in this respect, they in general become highly irritable, and the whole circulation is thrown into great disorder. That both the nervous and vascular systems may be tranquillized as much as possible, no more restraints should be used than are absolutely necessary for the personal safety of the lunatic. If any objects are fitted to excite our commiseration, it must surely be those who are insane; and certainly the first and last impulse of nature is to pity and protect them. The rigid mode of coercion which has been so much adopted towards those unfortunate persons, could only have originated in ignorance or interest, for there can be no question that the gentler the moral treatment

can be made, the greater is the chance of recovery. The scenes which have been lately brought to light in those places called asylums, are most repulsive to humanity; and as they have awakened the sympathy of the whole nation, we cannot doubt that a thorough reformation will be the consequence, and that the benevolent system, which has reflected, from the Retreat,* so mild a lustre upon the Society of Friends, will hereafter be universally adopted.

Between the local and constitutional states of the circulation in *recent*, and in *long continued* cases of madness, there is a wide difference; and it is in its earliest stages only while connected with those conditions of the vascular system before described, and not after it has become an habitual disease, that I consider it somewhat analogous to certain modifications of fever. If medical treatment be generally inefficient in *established* mania, it is surely unfair to conclude that it is likewise so in *incipient* mania; yet many writers on this subject have actually drawn such a conclusion. The friends of insane patients are most loath to part with them, until means have been tried for their recovery at home; and on that account hardly ever send them to asylums, until they have completely passed through the first stage of the disease,—that stage, and that alone, which is here

* See Description of the Retreat, an Institution near York, for Insane Persons of the Society of Friends; containing an Account of its Origin and Progress, the Modes of Treatment, and a Statement of Cases. By Samuel Tuke. York, 1813.

contended to be generally medicable. The reports, therefore, which proceed from those institutions are not to be considered really conclusive as to the power of medical treatment; since they commonly commence at that *advanced* stage of the disease where the efficacy of medicine may be said to terminate, and where every thing must be left to the moral regimen. There is yet indeed a chasm both in the *early* history and treatment of mania; and the man who can supply it, will deserve and receive the gratitude of his fellow-creatures. As the Retreat is among the best institutions existing for insane persons, I could wish, that its humane and enlightened conductors, in particular, would closely direct their attention to patients *recently* afflicted with mania, when such are admitted; for my observation certainly induces me to believe, that medical treatment, at an early period, is far more efficacious than the ingenious Tuke has been led to suppose. But as this opinion is entirely deduced from the *incipient* cases which have now and then occurred in my private practice, it is offered with all the deference which becomes a comparatively limited experience in this disease. It was deposed by the late Dr. Willis, that *nine persons out of ten recovered*, who had been placed under his care, *within three months after the attack of the disorder*. His deposition speaks volumes in favour of a proper treatment in the incipient stage of mania; and I cannot but express a most earnest wish, that it may be in the perpetual recollection of all those who are in-

trusted with lunatics. In many instances, madness is most distinctly foretold by great mental agitation and by great irregularities in the circulation, and then bleeding and purging may actually ward off the attack. Some patients of this kind have a most urgent desire to be bled from the mere feeling of uneasiness about the brain, and this desire ought never to be disregarded, for if it should, the feeling of uneasiness may become so unsupportable as to prompt the sufferer to make an attempt upon his life. Where the throat had been thus ineffectually cut, I have known the mind at once restored to tranquillity from the loss of blood, a circumstance which is much in favour of the preventive power of venesection in threatened insanity. Even during the progress of madness those cases will hold out the most promise of recovery, where the clearest signs of bodily disease are apparent; and on the contrary, those cases afford the least hope, where insanity exists without any decided marks of the general health being disturbed.

BRAIN-FEVER

OF

DRUNKENNESS.

BRAIN-FEVER

OF

DRUNKENNESS.

THERE is an interesting disease, which follows intoxication, and as it forms a sort of connecting link between mania and fever, and as it has been frequently presented to my observation, I shall now offer a few summary remarks, relative to its nature and cure. It is well known that a simple fever is frequently produced by intoxication, short stages of oppression, excitement, and collapse succeeding each other after the debauch: they are generally so mild as to terminate spontaneously, without immediate prejudice to health; but sometimes medical assistance is required, to prevent their assuming a threatening aspect. In other instances, intoxication has a more powerful influence, and leads to inflammations in some of the vital organs, or occasions venous congestions, which are not followed either by high or regular excitement of the arteries. The disorder in question is generally of the last mentioned kind, for it seems to be accompanied with partial congestions of the brain and liver, from which, together

with nervous irritation, it perhaps derives most of its peculiar characters.

This disease most frequently occurs in *habitual* drunkards, and especially when, after repeated fits of intoxication, they suddenly lessen or leave off their ordinary stimulus for a time. The first feelings of indisposition are lassitude, indistinct chills, loathing of food, uneasiness in the head, disturbed short slumbers, anxious countenance, and oppression at the pit of the stomach; and these are followed by retching or vomiting, white moist tongue, wildness and quickness of the look, weak rapid pulse, general irritability, watchfulness, tremors of the hands, and dampness of the skin increased by the slightest exercise. Confusion of mind, or forgetfulness supervenes, which passes on to a state closely resembling mania. The patients suppose that their affairs are ruined; or that certain persons have conspired to poison or shoot them; or that their friends have deceived or deserted them; or that they are confined against their inclination in a strange place. Occasionally they imagine that they see frightful objects, the impressions of which are so forcible, that they call loudly for assistance to drive them away. At other times, they declare that vermin are crawling over the bed or about their clothes; or that bright or dark spots are floating in the atmosphere; sometimes they fancy that they hear remarkable noises in the room or at a distance; and in other examples, alternately listen and speak, as if they were conversing with one that was present. They

are often intent upon calculations, buildings, projections, counting or picking up money, settling accounts, or some such imaginary employment; and if you attempt to address them, they will either unheedingly pursue their occupation, or abruptly tell you that they must not be interrupted. In short, they are either earnestly engaged with business immediately before them, or their attention is wholly engrossed by conspiracies, suspicions, dangers, or the like; and it is remarkable to observe, how the expressions of the countenance vary, according to the nature of the predominant impressions. If the patients be flatly contradicted, they are mostly very pertinacious in their opinions, and easily excited into passion; but if they be soothingly dealt with, they will now and then answer certain questions mildly, and even distinctly; nevertheless, if many interrogations be put to them in succession, they grow confused, and relapse into their former incoherence. Sometimes they mistake the names of things, or the pronunciation of words; and although they generally recognise most of their acquaintances, they load some of them with abuse on trivial occasions, and request the friendly interference of others.

Most of the symptoms enumerated continue from four to ten days, but cases less immediately urgent may be considerably more protracted. Some examples, indeed, which occurred to me existed, from first to last, nearly six weeks, and two assumed the character of confirmed madness,

which were finally cured; so that there can be no question but this disorder may identify itself with the true mania, in peculiar subjects. When convalescence is not restored within the first month, there will be a risk of long continued, if not permanent, alienation of mind; as the most strongly marked cases terminate successfully or mortally before that period. If a tranquil and long sleep can be procured in the commencement of the disease, recovery will commonly follow apace; although I once lost a patient unexpectedly in convulsions, after he awoke from an apparently quiet sleep of six hours. Indications of coma or convulsions; perpetual watchfulness; excessive irritation; violent and often renewed struggles; very rapid and thready pulse; frequent vomiting; extremely cold skin; subsultus tendinum; and especially small contracted pupils, with a degree of strabismus, are among the most unfavourable signs. Those patients who have been driven to intoxication from some great affliction, are generally in imminent danger; for during the progress of the complaint, their raving incessantly turns upon the recent calamity, and produces an irritation and exhaustion most difficult to be counteracted. But confirmed drunkards, who have previously laboured under chronic hepatitis, or some similar organic affection, perhaps stand the worst chance; at least I have seen two subjects of this kind, who sank rapidly under this disease.

In all I have now attended forty two cases of this disease, and out of the first sixteen, four

proved fatal, but only three out of the remaining twenty-six; the greater success in the latter having appeared to me chiefly to depend upon some differences made in the method of treatment. No more than two opportunities have occurred to me of examining the bodies of patients after death; and in both of these, slight congestions were found in the brain and liver, while the other viscera appeared natural. Yet I have known apoplexy terminate fatally, without more decided evidences of derangement having been exhibited by dissection; and it is an established fact, that in some subjects very moderate congestions of the brain will extinguish life. This disease invariably occurs during the existence of that general collapse which succeeds intoxication, when the tone of the heart and arteries is diminished, and when the venous system must consequently be more or less in a state of congestion; and of this congestion the brain more especially appears to participate,—as may be inferred from the uneasiness felt early in the head, the tremors of the hands, the subsequent derangement of mind, the occasional supervention of coma or convulsions, and the appearances on dissection. Yet the sense of load, which occurs at the commencement about the epigastrium, the dark unnatural colour of the stools, and the two morbid examinations before noticed, render it probable, that the liver is also usually affected. While it is equally evident, that the tone of the stomach is greatly impaired, and the functions of the skin much disordered on the

first attack; and though, during the progress of the disease, the stomach generally acquires the power of retaining whatever may be exhibited, the skin continues moist and relaxed. The peculiarly irritable state of the nerves induced by previous habits, the collapse of the system at the time of sickening, the venous congestions, and the subsequent efforts of arterial excitement, all tend to produce and modify the phenomena of this disease.

In very confirmed, old, or enervated drunkards, the general collapse of the system, at the time of the attack, seems to prevent the developement of any thing like an equable excitement; and we find the heat of the surface in that fluctuating or partial state, which often attends congestive fevers of the irregular kind. But in young or vigorous men, who have not been long or regularly accustomed to inebriation, sometimes a stage of general though imperfect excitement follows that of oppression; and these different characters of the disease, as modified by peculiarity of constitution, should always be borne in mind, for they require correspondent variations in the treatment. In debilitated and habitual drunkards, for instance, I have invariably seen blood-letting prejudicial even at the onset; and though mild purgatives are at that period beneficial, they cannot be safely exhibited at an advanced stage. On the contrary, in constitutions that have not been shaken by reiterated drunkenness, I have known early and moderate venesection of much use, especially when

followed by active aperients. For a long time I firmly believed, that depletion was always dangerous in this disease; but as I had imbibed this prejudice from having witnessed its injurious effects in the advanced stages, so it has been removed, by my having since seen it beneficial in the beginning of numerous cases. Yet I am fully persuaded, that there are not many instances where the lancet is really requisite; and also, that there are few where purgatives should be omitted in the commencement. On account of former habitudes, patients must generally be allowed a limited quantity of diffusible stimulus, but particularly those who have long been hard drinkers; since it is to them what ordinary food is to temperate persons,—it cannot be abstracted for any length of time without exhaustion being induced: indeed, when judiciously administered in this disease, it is often highly serviceable in allaying irritation, and communicating an energy to the heart and arteries, by which the equilibrium of the circulation may be ultimately restored. But as these are merely desultory hints, a summary and connected plan of the treatment shall be delivered.

In the first stage of this disease, the former mode of life, and the present condition of the patient, must be accurately investigated. If it should happen, that he has long been addicted to the free use of spirituous or vinous liquors; that the pulse is weak, and the face very pale; that the surface is clammy and cool, or in a variable and irregular state as to temperature; and that there are strong

signs of muscular relaxation,—why then all thoughts of venesection must be abandoned, even at the beginning. The abstraction of blood, under these circumstances, would only increase the venous congestion, by further diminishing the force of the heart and arteries; and would be almost as reprehensible as in the last stage of the simple or congestive typhus. In such cases, the bowels should first be opened by moderate doses of calomel, jalap, and the sulphate of magnesia; care being always taken to support the strength under their operation, by an occasional draught of warm negus. When the bowels have been sufficiently evacuated, about two or three gallons of tepid water, strongly impregnated with salt, should be dashed over the whole skin, which ought to be immediately dried, and well rubbed with warm flannels. After this operation, the patient should be put to bed, and about forty or fifty drops of the tincture of opium exhibited in a little warm wine, and repeated at the interval of two or three hours, provided sleep be not in the mean time procured. This treatment will occasionally restore the patient without any other means; but as in a large majority of cases, it only alleviates the symptoms, it will generally be requisite to follow it up by repeated doses of calomel and opium, which, together with the use of the tepid affusions, will rarely fail. Two or three grains of calomel with a grain and a half of opium, every six or eight hours, will be sufficient doses of these medicines on the first day of their admini-

stration; and after that period it will commonly be better to lessen the quantity of the opium: and as soon as the action of the calomel is at all developed on the gums or salivary glands, it should be entirely omitted, as its effects, for the most part, continue to increase for a few days afterwards. The tepid affusions may be used three or four times in the twenty-four hours, if the patient should be very furious or restless, but in general twice will suffice in that term. If the water be well impregnated with salt, the skin properly rubbed, and the opiate exhibited in warm wine after their application, a tendency to quietness or sleep most frequently succeeds; nay, there will not only be a diminution of the nervous irritation, but likewise an improvement in the state both of the pulse and the skin. If under these measures the bowels should not be daily moved, some mild aperient, such as castor oil, may be occasionally exhibited; but as weak and habitual drunkards cannot long bear even moderate evacuations without prejudice, laxative enemata should generally be substituted after the fourth or fifth day.

The exhibition of diffusible stimuli must be regulated, first by the preceding habits, secondly by the effect produced, and thirdly by the quantity of opium administered. A little of their usual beverage must be given now and then to habitual drunkards; and if it should be found to lessen the frequency of the pulse, the general irritation, and the tremors of the hands, we have certain tests of

its utility; but if it should quicken the pulse, augment the irritation, and increase the tremors of the hands, it must be omitted, and malt liquor substituted. By reason of such patients having been long accustomed to stimulation, they can bear larger and more frequent doses of opium than ordinary persons; and when it is freely exhibited, it will seldom be necessary to give much wine or spirits, even to the hardest drinkers. At the same time, as the leading object of the administration of this drug is to remove irritation, and induce sleep, its effects should be assiduously noted, that it may not be too liberally given. However efficacious opium may be under judicious management, I have seen and heard enough to be fully convinced, that it is a very perilous practice to administer it in too large and repeated doses, since apoplexy, coma, or convulsions, may be thereby produced.

When this disease occurs in tolerably robust subjects, who have been addicted only to occasional intoxication, purgatives must be more liberally prescribed, during the first two or three days in particular, than in habitual and enfeebled drunkards; and though in the latter, opium may often be given with advantage at an early period, yet in the former, experience has taught me, that it should hardly ever be exhibited, until the bowels have been freely and frequently evacuated. If I had sooner known the necessity of this precaution, I believe that my success would have been greater; but as I fell into the error of administering

opium indiscriminately in every stage and variety of this complaint, I am most anxious that it may be corrected here, for the sake of others. Even in *habitual* drunkards, I am quite confident, that it is always best, in the beginning of the disease, to open the bowels before the exhibition of opium: and to *occasional* drunkards, this observation may be extended with increased force, since in them the purgatives must be employed, not only at the onset, but during the progress of the distemper. In such persons, I mean occasional drunkards, it has been customary with me for some time, to use purgatives and the tepid affusions in the day, and calomel and opium in the night; and this plan, combined with a light diet, has rarely failed of success. In some few instances of this nature, I have known venesection requisite soon after the first seizure, when the brain appeared more than usually disordered by venous congestion, or arterial determination; but rarely more than eight or ten ounces were abstracted at once, and the operation never repeated beyond the second time. So far as I have observed, blisters are hurtful in every stage and modification of this disease: by increasing both the nervous irritation and the fever, they make the patient more restless and watchful, and thus exhaust his strength.

In occasional as well as in habitual drunkards, purgatives must be limited to the early periods of the disease; because they are most pernicious in the advanced stages, to which opium and calomel

are most suitable; the one to allay irritation, and the other to equalize the circulation. Habitual generally require larger doses of opium than occasional drunkards; and wine is commonly the best cordial for the first, and good malt liquor for the last. The advanced stages of this disease are generally marked by a small and excessively rapid pulse; cold as well as clammy skin; imperfect utterance; low muttering delirium; or sudden, short fits of frenzy followed by heaviness and insensibility; startings of the tendons; a frequently stretched out and very tremulous hand; a want of correspondence in the pupils; general prostration of muscular power; and difficulty of deglutition. When several of these symptoms are united in any instance, every species of depletion is of course out of the question: indeed that is generally the case when the worst forms of this disease have existed several days; and therefore the time of their continuance should always be precisely ascertained, before the practitioner ventures to prescribe. Under the most unpromising appearances, a combination of calomel and opium will sometimes succeed; and whenever there is ground for doubting the propriety of evacuations, it should be administered in preference to every other expedient. If it should be asked, how it is conceived that opium operates in this disease, I confess myself incompetent to give a full or satisfactory answer, and could only say of it, as Cicero said of two other medicines:—*Quid scammoneæ*

*radix ad purgandum, quid aristolochia ad morsus serpentum possit, video; quod satis est: cur possit, nescio.** It is truly remarkable, that one of the patients whom I attended was a female, who had long been in the habit of taking opium to a great extent, and who was attacked with this disorder on suddenly lessening the doses of her favourite drug. An universal collapse was the first effect, and that was succeeded by irritability of the stomach, dampness of the skin, tremors of the hands, pain in the head, watchfulness, and wandering of the mind. It appears that when, in a state of health, the energy of the constitution has been sustained by diffusible stimuli, their sudden abstraction or diminution so reduces the tone of the heart and the arteries, that they cannot maintain the natural equilibrium of the circulation; and that consequently there is an unusual accumulation of blood in the veins, by which the system is either oppressed, or roused into certain degrees of re-action, according to its condition at the time. Agreeably to this view we find, that those persons who freely indulge in the use of opium or strong liquors, are very liable to congestive and inflammatory diseases, and also to venous hemorrhages. It would lead me too far from my present subject, to point out the various

* De Divinatione lib. prim. pag. 11. M. Tullii Ciceronis Opera, cum Delectu Commentariorum. Edebat Josephus Olivetus, Academiæ Gallicæ XL Vir. Tomus tertius, qui Philosophicorum alter. Editio tertia, emendatissima. Genevæ, apud Fratres Cramer. M.DCC.LVIII.

effects of venous congestions; but I may observe by the way, that what are denominated passive hemorrhages, and one class of dropsical diseases, are chiefly dependent upon them. In many diseases, which are supposed to arise from pure debility, the venous system is overloaded with blood, while the action of the heart, and of the whole arterial circle is diminished in force, though it may be increased in frequency; and this loss of balance seems always to take place in the first stage of the disease of drunkards here considered, nor does the circulation appear to be perfectly equalized, at any period of its progress.

For this peculiar complaint there is yet one remedy which I have omitted to mention, that it might be made more prominent by standing alone. Perhaps few practitioners would *à priori* suppose, that the cold affusions could be safely, much less advantageously employed in such an affection; and yet this is actually the case, as can be proved by the most indisputable evidence. About three years ago, my friend Dr. Ramsay, of Newcastle-upon-Tyne, mentioned to me, that he had frequently applied the cold affusions with much benefit in the early stages of the brain fever of drunkards, when the surface was covered with sweat. Resting confidently upon his recommendation, I determined to try this treatment, as favourable occasions offered. The first patient on whom it was applied was an athletic young man, who had lately drunk very hard, and who had

only been ill a few days. About three gallons of cold salt water were dashed forcibly over his naked body, while he was in a state of profuse perspiration. Before the employment of this measure, he had been extremely furious, but after it, he became quite tractable, went to bed, and had some tolerably quiet sleep. The symptoms returned on the following day, and the cold affusion was again applied, with the same result as before; and from this period the recovery was rapid:—nor were any other means used, except an occasional opiate and purgative, with a little wine, and light nutritious soup. The second patient who underwent this practice was also a strong young man, though his case materially differed, in some respects, from the former. After a severe course of drinking, he was attacked with an inflammatory disease, which required purgatives and the antiphlogistic regimen for its removal. During his convalescence, his friends thought him rather eccentric in his manner; and though no positive disorder of mind could be detected for two or three weeks, it soon became quite apparent after he commenced his ordinary business. His memory was observed to be very defective, and he seemed in a perpetual bustle; he contracted for a house with one person, for a ship with another, and was not more restless during the day than watchful at nights. When I was first requested to visit him, the mental derangement had been obvious for three or four days: on my entering the room, he came forward,

shook me heartily by the hand, declared he was glad to see me, and appeared to be in high spirits. The skin was bathed in sweat, his tongue moist, his pulse quick, and the hands slightly tremulous. As I was proceeding to ask him some questions, he suddenly interrupted me, and said that as he expected letters of importance by the post, he knew that I would readily excuse him. His wife endeavoured to detain him, but he burst into a violent passion, and, forcing the door open, immediately left the house. Some acquaintances were shortly sent after him, but he had rambled so rapidly from place to place, that it was several hours before he could be found. On the first opportunity which offered, the cold affusion was tried, and it calmed the patient exceedingly:—it was repeated two or three times afterwards, and proved so highly beneficial, that merely an occasional aperient and opiate were necessary to complete the cure. In little more than a week from the commencement of my attendance, this man was correct in his mind, and has since continued well in all respects.

Without reporting more cases, it may be added, that I have never used the cold affusions but at an early period of this disease, and on those patients who appeared to have much constitutional vigour; and that I have not only given warm wine and water immediately before and after their application, but dried and rubbed the skin well with warm flannels, by way of supporting the *vis vitæ*, and

ensuring sufficient re-action. In all cases of a suspicious nature, I have invariably preferred the tepid affusions, but have found that they require to be followed by purgatives and opiates, or by opiates and calomel. It has been already stated, that I received the first hint of the utility of the cold affusions from Dr. Ramsay, whose professional eminence and private worth are a sufficient sanction for any practice that he might recommend. Yet as a further testimony in favour of this method of treatment, it may be mentioned, that Mr. Gregson, of Sunderland, without any knowledge of what Dr. Ramsay had done, has long been in the habit of occasionally using the cold affusions in the earlier stages of this disorder: his general practice, too, so far accords with mine, that he has sometimes found small or moderate bleedings useful on the first attack, at which time he never fails to give purgatives, and afterwards uniformly exhibits small and repeated doses of calomel with opium.*

This disease is certainly to be considered as a strictly febrile one, and the practice above mentioned seems at direct variance with the beautiful principles of Dr. Currie; for it is unquestionable, that the cold affusions may be successfully employed in it, when the skin is covered with perspiration, and either cool or of an unsteady heat.

* In No. 52 of the Edinburgh Medical Journal Dr. Wood of Newcastle recommends the free application of cold wet cloths to the head; and as his experience has been extensive in this disease, his recommendation is deserving of particular notice.

In every instance where I have seen this application used in the disorder in question, the conditions of the pulse and skin have been improved by it, and the general irritation greatly diminished. We know very well, that the operation of many remedial agents is much influenced by the state of the system at the time of their administration; and it is probably the extreme nervous irritation, so constantly attendant on this complaint, that enables the system to bear with advantage an application which seems to be prohibited, if we permit ourselves to be solely guided by the degrees of perspiration and heat. It is one of the most common mistakes of medical inquirers, to generalize from too scanty an accumulation of facts; and thus truth and error, like light and shade, are found blended together in the most distinguished works.

Having always found coercion most prejudicial in this disease, I have invariably allowed patients as much liberty as was compatible with their situation; and having seen that contradiction often highly increased their watchfulness and irritation, it has also been my aim to soothe them by address and conciliation. Guided by these principles, I have in several instances permitted them to walk abroad at their own request; and sometimes the influence of a cool atmosphere, united to that of compliance, has been useful in procuring rest. One man was allowed to go nearly a mile to look at the sea in a bleak evening, and soon after he returned he fell into a sound sleep, and was con-

valescent the next day; another walked about in a large apartment, when the weather was cold, with nothing but his shirt on for more than two hours, and afterwards went to bed of his own accord, and passing a quiet night, from that time recovered apace. In this disease, as in mania, the circulation is always thrown into much disorder by fasting, and therefore regular supplies of light food are necessary, which, like the other expedients recommended, will be found to allay the general turbulence of the system.

So little has been observed respecting the foregoing affection, that it has not yet obtained a place in our systems of physic; and there can be little doubt but it is still often confounded in practice with the ordinary mania and phrenitis. In 1801, Dr. Samuel Burton Pearson published an account of it, in a very small tract, which had only a local circulation; and it was to it that I was first indebted for some useful information regarding its character and cure. But it is well known, that the late Dr. Young, of Newcastle-upon-Tyne, treated it by opium long before Dr. Samuel Burton Pearson resided there; and though those two physicians were afterwards intimate friends, yet the latter never alluded to the former in his pamphlet. Desirous to awaken the attention of the faculty to this disorder, I published a short paper relative to it in 1812, and soon afterwards a reprint of Dr. Samuel Burton Pearson's original tract appeared, to which several additional observations were attached: some of those

observations, however, seem rather the effusions of fancy, than the deliberations of judgment; and the most extraordinary success, which this author records from opium, has not been confirmed by any practitioners of my acquaintance. In the following year, seemingly without any knowledge of what had been previously written, Dr. Sutton favoured the world with an excellent work on this disease,* and although he also speaks highly of opium, yet he candidly acknowledges, that he lost four patients out of twenty-two,—an average loss not materially different from mine. Among the ancient writers, I know of none who has described any thing like this complaint, with the exception of Hippocrates; and it certainly does seem to me that there are four or five cases in his Epidemics, in which many of its leading signs are specified; one in particular may be mentioned, and that is the case of Chærion in the third book. If it be objected, that tremor of the hands is not enumerated among the symptoms, it may be answered, that this though a general is not an universal concomitant: three cases have occurred in my practice in which it was absent, and these render doubtful the propriety of the name which Dr. Sutton has imposed. We require, in fact, to be more fully acquainted with the nature of the disease, before we can give it a correct designation, and it affords a subject well worthy of the most serious investigation. The remarks which I

* See Tracts on Delirium Tremens, &c. By Thomas Sutton, M.D. London, 1813.

have hazarded were indeed drawn from my own experience, but they rather form materials for inquiry, than a substantial basis for the pathology and treatment of so curious an affection.

If former habits, and existing peculiarities, require so material a modification in the treatment of one febrile disease, it may be reasonably asked if they should not be taken into account in every other? That they should, certainly does not admit of the least dispute; for, however accurately general principles may be laid down, circumstances will occur in individuals to render a deviation from them an imperious duty. Few cases of typhus have been presented to me in confirmed drunkards, but in those few the period proper for evacuations rapidly passed away, and what are called the nervous symptoms appeared much sooner than ordinary; and I have remarked, that whenever such persons are attacked with inflammation the stage of excitement speedily gives way to that of universal collapse. In them, therefore, there is less time allowed than common for depletion, and even in that time the depletion requires to be carefully made: purging may then be freely employed, but they can neither bear copious nor repeated abstractions of blood, though small or moderate ones are frequently very beneficial. Since I became fully acquainted with the great efficacy of calomel and opium, I have successfully applied this combination to such subjects labouring under congestive or inflammatory disorders; and I can confidently recommend it as an ex-

cellent remedy in most of those dubious cases, where evacuations cannot be pushed beyond a certain point, without immediate prejudice or danger. Nearly two years ago, I was consulted in the case of an old and enervated wine-bibber, who was severely afflicted with the gout in both feet and hands; and, besides, symptoms of hepatitis evidently existed. His skin was hot, the tongue very foul, the breathing anxious, and the pulse weak as well as quick; he retched a great deal, could not bear pressure under the right hypochondrium, was much exhausted, and occasionally wandered in his mind. In this instance, bleeding appeared to me entirely inadmissible; and instead of it, therefore, I prescribed full and repeated doses of calomel with moderate and occasional ones of opium, applied a blister over the region of the liver, and kept the bowels open by castor oil and injections. As soon as the mouth became decidedly sore, all the gouty pains ceased; and by a perseverance in purgatives and alteratives, with light support, the patient ultimately did well. But there are other causes beside drunkenness which modify the treatment of febrile diseases.

Between young and aged subjects a striking difference exists, relative to their capability of bearing determinate losses of blood. In the former, when large quantities have been drawn in a short period, the energies of the system, if the disease be removed, soon restore the strength,—but in the latter, the same treatment, even if it removed

the disease for which it was adopted, would not unfrequently produce an irretrievable debility, the system, for want of innate energy, not being able to renovate again. Therefore, in contagious fevers especially, aged should never be depleted so much as young people. It is a common opinion, that the inhabitants of very populous towns do not bear evacuations in fevers, so well as those who live in the thinly peopled districts of the country. Although this notion has been much too strongly insisted upon by some practitioners of the metropolis, yet it confessedly ought not to be disregarded, as fevers are liable to be modified by the places and constitutions in which they appear. In large crowded cities, many of the lower orders of society are not only excluded from invigorating exercises in the open air, but they are likewise more dissipated and irregular in their habits, than similar classes of people, who follow agricultural employments. Moreover, among the former, there is sometimes at once greater luxury and greater want; for they occasionally live days together on highly stimulating aliments and drinks, and, having thus expended their earnings, are for a time almost starving for want of the common necessaries of life. The extremes of excitement and depression, which such irregularities produce, doubtless have considerable influence on the habit. When such people, therefore, are attacked by contagious fevers, they cannot bear large nor frequent evacuations of blood, nor long suffer with safety an entire abstraction of nutritious food.

As the greater part of them, too, live in narrow, low, stifling apartments, the re-action of the heart and arteries is seldom excessive: on the contrary, in the fresh, pure air, and among the robust and temperate inhabitants of the country, there is a higher developement of excitement. Readily admitting, then, that there is often a marked difference between the same species of fever in a confined and in an open place, in a vigorous and in a comparatively enfeebled system, still this difference only requires a modified application of the same or similar means. It was degrading to science, and shocking to humanity, to witness the practice which once existed in some hospitals, where typhous patients had no sooner entered than they were crammed with bark and wine, to prevent, as was strangely imagined, debility or putrescency—conditions of the system which these very means tended eventually to produce in the last stages, by their excessive stimulation in the first. Happily this treatment, however, is now falling into deserved neglect even in such institutions, where the antiphlogistic mode of cure is far more generally adopted in the beginning of febrile disorders.

But notwithstanding the improvements which have taken place in the practice of physic, there is still too general a dread of blood-letting in what are designated idiopathic fevers, particularly when they proceed from contagion. Many practitioners are too apt to avail themselves of circumstances like those mentioned above, as pretences

for avoiding venesection, when it ought to be promptly and moderately employed. The cooling mode of treatment has lessened in modern times the frequency of the putrid appearances which were once so common when patients were confined in close and warm apartments; and the introduction of the purgative plan, by Dr. James Hamilton, senior, has yet more effectually tended to diminish the number of malignant cases. But if to these two methods, that of blood-letting was more frequently added at the commencement of the more urgent forms, we should hardly ever witness the horrible train of symptoms, which still attends the last stage of some of our worst contagious fevers, when treated in the ordinary way. Unfortunately, the early periods of such disorders have been greatly neglected by many authors of eminence, while their attention has been closely directed to the phenomena of the advanced stages, which are invariably nothing more than the results of the morbid actions of the first. This has been and is still one great cause of error both in speculation and practice. Remarkable as it may appear, the fevers now accounted the most putrid or malignant in our systems of physic, are those which absolutely require the most vigorous measures in the onset; because they are at first attended with the most highly inflammatory or congestive symptoms, according to the degrees of which is the putrescency or malignity of the last stage. Cut short the inflammatory or congestive symptoms in the beginning, and nothing putrid or

malignant will be seen;—allow them to advance uninterruptedly, and then come, as their effects, those appalling indications of putrescency or malignity, about which too much has been written, and too little understood. If there is any point which I would more earnestly impress upon the mind of the practitioner than another, it is this,—that in the treatment of all acute fevers, it will be found the best general rule *to attack the leading symptoms as soon as ever they appear.* We too often allow ourselves to be embarrassed by unfounded fears, concerning the sedative effects of contagion, or by abstract speculations about proximate causes, until the most precious moments for efficient action are entirely lost, and the unresisted disease has sapped and shaken the very citadel of existence. We shall have more distinct conceptions of all febrile diseases, when the primary symptoms are made the most conspicuous, and we shall then fully perceive the dangers of hesitation and delay, and fully estimate the powers of promptitude and decision in the beginning of urgent cases. But if much advantage results from the use of evacuants in the early stage of most febrile diseases, it is equally certain that great and irreparable mischief results from their abuse in the middle and last stages, especially in what are termed idiopathic fevers; and we must not therefore, evacuate alike in all forms and stages of fever, but on the contrary nicely vary the treatment according to the existing circumstances, that it may be active, mode-

rate, or mild, just as the symptoms really indicate. In order still more deeply to impress these maxims upon the mind of the student and practitioner, I shall endeavour to re-capitulate, and apply the doctrine of a congestive, a simple, and an inflammatory variety of fever to some of the most important purposes of practice; and as it must have been perceived, that my main object all along was to draw the attention to these purposes by presenting them in various points of view, so I will not hesitate to employ circumlocutions, that my meaning may be more fully comprehended.

RECAPITULATION

OF

SOME POINTS.

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FROM whatever causes febrile diseases may proceed, the doctrine of a congestive, a simple, and an inflammatory variety will go far to explain the internal pathology of all: for how much soever the external symptoms differ, still one or other of these varieties will be found to predominate, and its effects on the viscera will constitute the great objects of treatment; though of course no prudent practitioner will ever fail to take into account the minor bearings of the external symptoms, and all the leading peculiarities of the sick. It was noticed in the beginning of this work, that the causes of fever might be arranged into three classes, namely, specific contagions, marsh and similar effluvia, and such ordinary causes as cold, intemperance, and the like, which cannot be referred to either of the foregoing classes. Now the effects of these three classes of causes may be reduced to two kinds—common effects, and peculiar effects. The common effects are venous congestion, simple excitement, and that arterial disturbance called inflammation:—the

peculiar effects though not solely confined to the outward signs are most conspicuous in them, the appearances of the skin, for example, respectively differing in typhus, measles, and scarlet fever. Some of the grand effects of the specific and ordinary causes shall first be traced, and those of marsh effluvium afterwards briefly noticed.

It almost invariably occurs in fevers proceeding from specific causes, and very often in those proceeding from ordinary causes, that they are ushered in by a general lassitude, variable as to degree and duration, in which the nervous sensibility as well as the muscular tone is diminished, the animal heat reduced or rendered irregular, the pulse oppressed, and the functions of the stomach mostly impaired. When this primary stage is not succeeded by an increase of the heart's action and of the animal heat, but remains and interrupts the usual series of febrile phenomena, it constitutes what I have denominated the congestive variety of fever, which may be traced in the works of most authors who have written from extensive observation, though its pathology has generally been confounded with that of the other forms. The first operation of specific causes may be directly on the nervous system from some peculiar property, or it may be indirectly by inducing some change in the constitution of the blood; and in like manner the first operation of ordinary causes may be directly on the nervous system by a general shock, or it may be indirectly by abstracting caloric, which is one of the natural

excitants of the body. In the operation, however, both of specific and of ordinary causes, the intercourse between the nervous and vascular systems is signally displayed, from the impressions communicated to the former, being concentrated on the moving power of the latter, for the heart's action is remarkably oppressed. The superficial veins contract, and the blood retiring from them into those which are deeper seated, is at last preternaturally accumulated about the right ventricle and the large internal veins, while proportionably less blood than common flows on the side of the arteries. Thus the natural balance between the venous and arterial apparatus is lost, the right ventricle being considered a part of the one, and the left ventricle a part of the other. Is this peculiar state, then, of the heart real debility, or is the strength of that organ merely suppressed, from the over accumulation of blood in the veins? Few questions in pathology are more important and difficult than this, if viewed in all its bearings. Though Sydenham has not designated the congestive variety of fever by any particular name, he was nevertheless fully aware of its existence, and considered it solely to depend upon an oppression by which nature was so much overcome as not to be able to raise regular symptoms. In illustration of this opinion he gives the case of a young man, who seemed in a manner expiring, and whose skin felt so cool, that he failed to persuade the attendants that the youth had a fever, which could not, he continues, disengage

and show itself clearly because the vessels were so full as to obstruct the motion of the blood. Sydenham declared, that upon bleeding him the fever would rise high enough. Accordingly he took away a large quantity of blood, and as violent a fever openly appeared as he ever encountered, which did not abate till bleeding had been three or four times used.* In the prior editions of this work, I was not aware of such a coincidence of opinion and practice with one whom I venerate beyond any past authority in physic. The sentiments indeed of Sydenham are similar to those which I formerly advanced, though doubtless he has expressed them in terms too general correctly to apply to all the various modifications and stages of congestive fever.

If we take the very extreme cases of venous congestion, those in which the *causa morbi* is at once so perfectly overwhelming as really to sink the constitutional powers for a time, we should be disposed to defer evacuations until the first shock was over; as we find is every day done by the best practical surgeons when the force of the heart is subdued, and the animal heat reduced every where below the natural standard, by the great shock of a fall from a height, or other accident. In all of such extreme examples, the immediate object is to restore the animal heat by external and internal warmth, and to keep the heart in play by the cautious exhibition of cordials.

* Swan's Translation of Sydenham, p. 570, the third edition.

The first shock being once over, if what is called reaction should follow, if the heart's action and the animal heat should be preternaturally exalted, then the indications for evacuating are distinct, because the disease has been converted into one of excitement. But if, on the contrary, when the first shock is over and the constitutional powers have in some degree rallied, but so ineffectually, that the heart is still oppressed and the animal heat still irregular, with palpable signs of venous congestion in some important organ, then bleeding may be beneficial, assisted by those means which raise and equalize the animal heat; for in that case the oppression is continued by effects remaining after the subsidence of the first shock, in fact by over-accumulations of venous blood in the interior, which may prove mortal, if not opportunely removed, by preventing the developement of that excitement, which constitutes the genuine febrile state.

The first shock, however, of specific and ordinary causes is seldom immediately threatening, but soon subsiding, it leaves those congestions by which the primary stage is prolonged, where the latent energies of nature are not sufficient to rouse the heart into increased action; and then indeed, as at a certain period of the former case, external and internal warmth, with blood-letting, is often necessary to create that reaction which nature unassisted had failed to establish; but where these means do not fully accomplish the purpose, calomel and opium will be found power-

ful auxiliaries, when administered in the mode before recommended. Now and then it will be necessary to bleed and to give diffusible stimuli at one and the same time, for this treatment is not inconsistent where the *vis insita* requires to be immediately supported under that loss of blood which is ultimately to free the heart or some other organ from oppression; but it should never be forgotten, that the stimuli are only designed to answer a temporary though important purpose, and that they should be withdrawn as soon as ever the heart's action is fairly renewed, since the danger then will be not from a deficiency, but from an excess of the true febrile condition. Whenever the animal heat is sunk much beneath the ordinary standard and the pulse continues weak and small, venesection cannot be safely used, until it be in some measure restored by the communication of caloric; and hence in some urgent examples of congestive fever, which arose from a sudden plunge into cold water, I have seen the hot bath first useful, and venesection afterwards necessary to save the patients from apoplexy or some other internal congestion of venous blood. In those instances of congestive fever where the first attack is not so strongly declared, but where the patient walks about for a few days, pale, shivery, and oppressed, an active purgative and the warm bath will sometimes be enough to develope the excitement; but if these should fail a little blood taken by the lancet or by leeches will generally succeed, particularly when followed by an

emetic and a few doses of calomel. But whenever blood-letting may be deemed requisite in the congestive variety of fever, the propriety of continuing or stopping the operation, must be determined by the effect which the loss of blood has upon the pulse. Where the pulse rises in fulness and firmness under the loss of blood, a perseverance in the operation is strongly indicated until the oppression be relieved, though it should not be carried to syncope, as in the excitive forms of fever; and on the contrary where the pulse sinks under the loss of blood it is as certain a criterion, that the operation should be immediately staid, for the object clearly is not to sink, but to free the action of the heart. In the last stage of the congestive variety of fever it is fully as necessary to abstain from evacuations of blood as in the last stage of the excitive forms, because the strength is then so exhausted, in the first, that the only chance for recovery is in the use of warmth, cordials, blisters, mild laxatives, and calomel with a little opium; and even what has been said about the propriety of blood-letting in the early stage must only be considered as applicable to those patients who have been healthy previously to the occurrence of the venous congestion, for there are some to whom this treatment is not suitable as shall now be shown.

Every man who dispassionately reviews the facts which come before him must be satisfied, that there are discrepancies in the condition of patients which demand considerable modifications to be

made in the treatment; unless indeed this truth be kept constantly in view, general principles might lead to serious mistakes, for a difference even in the degree of the same application may make the difference between death and recovery in the result of some delicate cases. When congestive fever occurs in persons weak and emaciated from a prior disease, when for example it attacks them while just convalescent from typhus, the strength is not merely suppressed as in those who had been previously possessed of their full vigour, but it is really exhausted by the primary impulse of the disease: therefore warmth externally and internally applied, cordials with very small doses of laudanum, and a moderate allowance of tepid wine and water are necessary in the first instance, with light nutriment afterwards, such as chicken broth or arrow root; and when the temperature of the body shall have been equalized, and the tone of the heart renewed, laxatives must be prescribed to ward off inflammation, which if it should however supervene must be treated as already directed in such enervated subjects. Some weakly patients, who had before been badly fed, clothed, and lodged, have been brought into the Fever Institution on the fifth, sixth, or seventh day of the attack of typhus, yet with signs of the milder congestive variety; and such have mostly soon been convalescent by the employment of external warmth, by thin tepid drinks of arrow root, and by the exhibition of a few doses of calomel, as the liver as well as the

head was affected. Even while composing this page, two patients are in the wards in a convalescent state from this treatment, who were both brought in with cool skins, feeble, fluttering pulse, excessive giddiness, great prostration of the strength, load at the præcordia and other signs, pathognomonic of venous congestion, and both were so suddenly overpowered at the very commencement as to be unable to support themselves in the erect position. We are too little accustomed to consider the primary oppression dangerous in fever, because it is most frequently overcome by the efforts of nature, but even then the symptoms of the first stage constitute the elements out of which the subsequent excitement mildly or severely arises according to the degree of those symptoms; and where the excitement is not thus developed but wholly or partially suppressed, this smothered sort of fever, termed the congestive, is always highly hazardous. The re-action, therefore, which so very frequently follows the stage of oppression is immediately beneficial, whatever may be its final tendency, inasmuch as arterial excitement is far less dangerous than venous congestion; and one cannot but admire the economy of nature which has provided, that the last shall generally produce the first, by stimulating the heart to that exalted degree which gives rise to an open and regular fever.

In fevers of venous congestion, there is a deficiency of the full and free action of the heart, and likewise a deficiency or an irregularity of the animal

heat: but there is an excess of the action of the heart, and an excess of the animal heat in open fevers of excitement. Thus it will appear, that the motion of the heart is most intimately concerned in every variety of fever. If when its action is deficient, there be any local loss of tone in the veins, or any latent interruption, to pass over certain peculiarities of structure, the remora and accumulation of blood will take place in those vessels; as the over distension of the right ventricle must necessarily impede the free return of all the column of venous blood, and perhaps even some of the blood in the capillary arteries which anastomose with their correspondent ramuli of veins. On the contrary, where the action of the heart is increased, if there be any topical weakness or interruption in any part of the arterial system, the inflammation will be developed in that part, because the augmented force of the ventricle must increase the local embarrassment by sending more blood there than before. The supervention of the hot stage is serviceable by removing the venous congestions of the first stage, but when those congestions have been considerable, they may leave predispositions which may be afterwards converted into inflammation; yet the hot stage is not necessarily attended by inflammation, as the modern followers of Erasistratus would have us to believe, but exists either without, or with inflammation. That condition of the circulation which exists in the hot stage without inflammation not having any name in our

language, I have designated it by the term simple excitement. It is only in bodies, however, where we have the organs in a sound and equalized state as to the circulation, that we witness a fever of simple excitement, which may even of itself so disturb the capillary circulation in its progress as to occasion topical inflammation: for it is easy to conceive, that if any part of the capillary system should be once over-distended or otherwise interrupted in its circulation, the action of the heart alone, the mere continuance of the current propelled from the left ventricle might at length produce the disturbance called inflammation; as in any given number of small tubes supplied from a fountain constantly flowing, the water would continue to accumulate in those points where an interruption to its course existed. The infinite number of anastomoses in the capillary system no doubt has been partly designed to compensate for certain degrees of interruption to the circulation of the blood in these wonderfully minute vessels; and indeed without such a provision by anastomoses it is difficult to perceive how the circulation could have been carried on with any degree of regularity, when local interruptions occur or when the heart's action is much disturbed.

It was formerly shown, that simple excitement consists in an increase of the heart's action, and of the animal heat, co-existing with some change in the secretions, and with an equable distribution of blood throughout the body. This form of fever is oftenest met in well organized children

whose viscera are the soundest. It is likewise frequently seen in those secondary seizures termed relapses, and sometimes remains, as in typhus for example, when every sign of inflammation had been removed. Simple excitement, however, has often a tendency, on the principles already explained, to produce inflammation, to assume in fact a complicated character; so that it should always be moderated from the beginning by alvine evacuations and the strictly antiphlogistic regimen; and these means in a majority of mild cases will prevent the necessity of blood-letting, to which indeed they are frequently preferable, especially in delicate habits. When inflammation, however, occurs or is even threatened in the early or intermediate stages of this form of fever, general or local bleeding becomes a necessary auxiliary, according to the powers of the patient, and the importance of the organ implicated. But when a topical embarrassment, say of the brain or of the lungs, takes place in the last stage when the energy of the heart and whole system are giving way, the venesection must be avoided as a deadly mean; and in its stead, gentle laxatives, small doses of calomel, with a little opium now and then, light nutriment, and free ventilation are generally among the best measures at that critical period. Patients die of what is called idiopathic fever, where the excitement had remained simple till towards the close, and then some vital organ began to labour, from some interruption in its capillary circulation. On examining the

body, the vessels of this organ are accordingly found injected with blood, and, may be, there is an effusion of very thin serum. These are pronounced to be genuine evidences of inflammation, and yet the theoretical practitioner marvels, that the patient should have sunk so fast under the loss of blood. But this state of the vessels, so common towards the close of idiopathic fevers commencing with a simple excitement, ought not to be considered as inflammatory, for if it be treated as such, the issue will be death. This state in truth is purely an injection dependant on the failure of the *vis a tergo*, on the diminution of the forcing power of the heart, together with that universal relaxation of which the vessels partake, and which is the main cause of the thin serous effusion. Now that the doctrines of debility have been broken up, and the minds of students are susceptible of novel impressions, it is necessary to warn them against that illogical generalization which makes fever inflammation, and nothing but inflammation: for how plausible soever this simplification may seem in the closet, at the middle but especially at the advanced stages of many idiopathic fevers, it will be found most perilous at the bedside, where nothing but truth can be available. Under the circumstances here alluded to, a very mild treatment is most frequently requisite, and the very shock of those active measures which would be deemed necessary for the reduction of the supposed inflammation might soon be fatally declared. Nay, there are some cases of idiopathic

fever, in which it is best to avoid bleeding even in the beginning, and to trust to purgatives, subacid drinks, tepid ablutions, a cool fresh atmosphere, absolute rest, and a light diet of vegetable slops; and such in fact were some of the epidemic cases of that low fever of irritation which I witnessed among the poor of the metropolis within the last year, and such also, I have understood, on good authority, were some of those seen among the poor of Ireland, in which bleeding was not required, as indeed appears from published reports. In those people who have been previously long destitute of several of the necessaries, and of all the tranquillizing comforts of life, a very cautious procedure is demanded when they are attacked by fever: for in them a part of the disease is referrible to constitutional irritation combined with constitutional relaxation; and no species of evacuation is in general well sustained, except that procured by purgatives from the intestines. In his range of observation, the medical man should perpetually examine and weigh all the circumstances which bear directly and indirectly upon the cases in which he is consulted; for unless he constantly accustom himself to such minute and comprehensive surveys, his practice will be little better than a series of experiments upon human health and human life. The causes of disease, the circumstances under which they are applied, the age, habits, and other peculiarities of the sick, with the nature of symptoms and their seats, are all worthy of the most serious con-

sideration; and where the issue of the opinion delivered is the life or the death of the confiding patient, the practitioner should inquire and reflect till his conscience tells him, that he has done his duty. It is not the hurried glance of a few minutes which can penetrate the nature of an intricate disorder, and the plan fittest for its removal; but it is the deliberate investigation which discovers data, and from these deduces appropriate methods of cure. Having so frequently had occasion to insist on the decisive employment of the lancet and of other powerful agents at the outset of certain acute cases, I have felt exceedingly anxious to warn others against their abuse; because unless the depletory practice be carefully regulated by right principles, it is more likely to be a bane than a benefit to society, especially in the hands of the young and inexperienced, who are so apt to be led astray by daring and unqualified appeals to their decision.

The third variety of fever is that where the excitement is not simple but complicated, where an increase in the action of the heart and of the animal heat is co-existent with the arterial disturbance termed inflammation, which it has been shown is far more frequently a consequence than a cause of the constitutional change called fever, and which signally disorders the functions, and threatens the structure of the affected organ. When this inflammation occurs at an early period, while the general powers are yet unimpaired, it should at once be decisively met by active mea-

sures until the signs of it be removed: but where it exists or occurs at a sort of middle point between the first and the last periods of excitement, the treatment must be accordingly graduated, because to a certain extent the constitution is the less capable of bearing evacuations of blood; and where the inflammation has been allowed to pass on until real exhaustion actually approaches, the opportunity for blood-letting is completely past, and then the combined influences of calomel and opium, with blisters, occasional laxatives, and light support, are the most suitable means. In what are denominated symptomatic fevers, such as ordinary enteritis from cold, the inflammation is a prominent feature almost from the very first occurrence of the excitement; whereas in what are denominated idiopathic fevers, the inflammation frequently is not clearly manifested so early, and this constitutes the great practical difference between them; for in both the inflammation in most instances being the product of the fever, they might in such be considered pathologically similar. This is a difference, however, which ought often to influence our conduct, because the capability of sustaining the shock of a powerful treatment is much greater in an inflammation which occurs at the beginning of the excitement, than in one which takes place some days later, when the strength has suffered from the continuance of that excitement; and hence evacuations, but especially by the lancet, may often be much more boldly and advantageously pursued in those

fevers where the inflammation occurs on the first or second day, than in those where it occurs some days after, and hence also it is often more indistinctly denoted in the latter, because the sensibility of the nervous system is mostly somewhat diminished before the occurrence of the inflammation. The nature of the exciting cause, too, frequently has a strong claim to our attention, as far as the measure of depletion is concerned in the inflammatory forms of fever. For example, the common continued fever generally proceeds from the influence of the weather, and during the greater part of its progress is accompanied with much less muscular prostration than typhus: though in the beginning of both these fevers, bleeding is often highly beneficial when inflammation is present, yet even at the middle period of both, the same degree of depletion could not be used with the same effect; for in the common continued fever, the pulse would then mostly be tense and resisting, whereas in typhus it would be soft and very compressible, and a comparison of all the symptoms would show considerably more relaxation in the latter. Besides, typhus being fully established at that time, it would hold a determinate course even if the inflammation should be removed, so that the evacuations should be regulated not only according to the degree of the inflammation and of constitutional power, but likewise according to the probable struggle that the patient would have to make afterwards with a fever which must still go on for

a certain number of days.* On the contrary, in the common continued fever, if the bleeding removed the local inflammation for which it was used, the fever probably would be cut short at once; but even if the fever should not be wholly removed with the inflammation, still the bleeding would occasion less diminution of strength. If the parallel were extended to the last stage of the common continued fever and of typhus, still upon the whole the treatment would require to be more cautiously conducted in the last; though at that critical conjuncture, indeed, seldom any evacuation is justifiable except that procured by the mildest laxatives. Many patients have been lost by pushing purgatives too far in the advanced stages of fever, and that practitioner will be most successful in the main, who, rather relying upon nature than upon art at this period, contributes every thing in his power to the comforts of his patient, by directing or performing the nice and important offices of the nurse.

* When typhus is protracted beyond the third week, it will be found, most frequently, that the fever is maintained by some local irritation; and as that local irritation is not always internal, but sometimes caused solely by the formation of an external slough, the surface of the body should always be carefully examined. Sloughs are far more apt to take place in specific than in ordinary fevers, on account of the greater relaxation which occurs towards the termination of the former; and as they at first sometimes give little uneasiness, I have known them overlooked so long, that at last they became truly formidable in typhus. Whenever any fever has run on so as to occasion much irritation, the patient should be laid upon a soft but not a thick bed, for a hard one is then not only liable to induce sloughs, but to give rise to so much irritation as often to prevent the patient from resting well.

Moreover in determining the treatment of the inflammatory variety of fever, the peculiar conditions of patients should never be disregarded. Thus if a woman in an ordinary state laboured under peritoneal inflammation of an acute kind, and another in a puerperal state laboured under an equally acute inflammation of the part, considerably more promptitude would be necessary in the last than in the first case; because from the peculiar irritability of the constitution in the puerperal state, and from the uterus and adjacent parts being local irritants on account of their tender state and vascular distension, the inflammation would have a more rapid progress. It is for want of having understood this properly that so many men have lost their patients in the puerperal fever, even when they had considered it as an inflammatory affection of the peritoneum. In common peritonitis, say proceeding from cold when the woman had been previously well, the practitioner may often bleed at bed-time, and wait till the next morning with safety before the operation be repeated, and he may in like manner allow respite between the operations of the purgatives prescribed; but in a highly acute case of the puerperal fever, in which peritonitis is also the essential disease, if he were to proceed in the same manner, he would be almost certain to lose by far the larger proportion of his patients. In the puerperal fever where an acute abdominal inflammation exists, the practitioner must make up his mind to have no truce

with the disease, in a word to bleed early till the pain be completely relieved, and to get the bowels effectually opened as rapidly as possible; and if his first efforts should not succeed in subduing the signs of the inflammation, so far from waiting many hours, he should repeat the venesection without the loss of one hour, aye, and shortly have recourse to it again with the same firmness of purpose, if the symptoms render it necessary. In its most acute forms, the puerperal fever is a monster which must be crushed with a giant arm. The puny force of half measures will avail nothing. Exceedingly few instances of the puerperal fever have been fatal in my practice where the patients were committed to my care from the beginning; and I am confident, that the success has been owing solely to decision and attention, for I have watched them through the day, and through the night till they were in safety. The loss of a single night has often been an omission so mortal in its consequences that no future attention of the anxious practitioner could recall it; and I would here, therefore, caution my professional brethren not to let the night pass over without visiting their patients labouring under such perilous diseases as the puerperal fever. It is frequently best to sit up all night with patients, and nothing can be more gratifying where such attention is successful; and where it fails, it is still consolatory, because we are then conscious that we have left nothing undone on our parts. The responsibility of medical men is awful on

many occasions of urgent disease, and they should never allow themselves to be so lost in the degrading rivalry of money-making, as not to devote themselves earnestly to the science of their profession, and to all the required duties of humanity.

But if there be some peculiarities of patients in which such determined deviations from the common mode of evacuation are necessary, there are others which require much gentler expedients than ordinarily employed; and having particularly pointed out some of these in considering what methods of cure were appropriate to the emaciated subjects of secondary fever, it will only be necessary to repeat how cautiously evacuations should always be pursued where inflammation exists in a body really debilitated. Nay, even in robust habits we should no longer repeat the venesection than the symptoms of inflammation clearly justify, for I have seen patients so profusely and indiscriminately bled that they died from sheer exhaustion; and on examination of the bodies no trace of the original disease could be discovered, though it had been confidently anticipated, that the wreck from inflammation would be fully declared. Even when evacuations of blood have been judiciously made in inflammatory diseases, it is useful to pause, and ask ourselves how much of the remaining disorder of the system may be fairly referrible to irritation; for sometimes the seasonable use of full doses of opium, after large depletion, will save the

patient, who would otherwise have perished from the irritation previously established in the nervous system. In making some dissections after the termination of inflammatory diseases, I have been much struck with the exceedingly slight vestiges of inflammation which remained, and on reviewing the history of the cases could not but be convinced, that the patients had not died of inflammation but from irritation, from that increased and continued labour which is, by some change in the nervous system, thrown upon the heart till it is at last exhausted; and since I was well assured of this fact, I think, that I have contributed to save the life of several patients by administering opium, when the irritation ran high after copious depletion, until the quick quivering pulse became slow, or until sleep was procured. In alluding to peculiarities, it may be worthy of remark, that the seat of the inflammation sometimes renders a selection of measures highly expedient. Thus though an antimonial emetic might be useful in an inflammation of the larynx, it would be quite the contrary in common gastritis; and thus though a full dose of opium might be useful in a painful inflammation of the bowels, it would be prejudicial in the beginning of inflammation of the brain. In the consideration of the inflammatory variety of fever, then, these and other circumstances will not be forgotten by those who are fully aware, that success is often founded upon an attention to minute things. It will be found no unimportant part in the code of medical wari-

ness, for a man to see his orders in critical cases carried fully into effect, for if he trust to others he may be grievously disappointed; and thus, to give an example in point, I have known nurses to fail in the application of leeches, or assistants in the operation of venesection, by which the most painful embarrassment was produced from the consequent loss of time.

There are some particulars respecting the animal heat which appertain to excitement when simple, and when complicated with inflammation. In every fever where the animal heat remains preternaturally augmented, the fluids undergo some alterations, as is manifestly set forth in the changes of all or most of the secretions. These alterations, however, are more remarkable in fevers which proceed from specific, than in those which proceed from ordinary causes. In modern times we have been far too much disposed to ridicule the humoral pathology, but the truth is, that all specific fevers may be considered as humoral diseases, so signally and so peculiarly are the fluids affected, and there are many other affections to which this doctrine is in part applicable. If the advancing state of knowledge has revealed to us the incorrectness of the phraseology and reasoning of some older writers, yet we are not thereby authorized surely to despise their communicated facts; and who can peruse the admirable writings of Sydenham without being assured, that the fluids did undergo changes in the fevers which he has described, and who can at this day watch the

progress of typhus at the bed-side, and not be convinced, that they still undergo similar changes? In fevers, the morbid secretions do not so much arise from a fault in this or in that organ, as from some general state of the body influencing the particular secretions; and it has assuredly been one of the most frequent mistakes in modern pathology to infer, that a particular organ is decidedly diseased merely because its secretions are disordered. It is from a fallacy of this nature, that the liver has been converted into the sink of so many diseases. Let any temporary irritation be set up in the nervous system, from a meal of indigestible food, from mental anxiety, or from a debauch of wine, so as to disturb the heart's action and raise the animal heat, the alvine evacuations will soon become unnatural; but here the morbid condition of the bile is not the effect of a disease in the liver, but immediately results from a general state, which being removed, the stools become of a natural appearance. It is precisely the same in most febrile complaints, where the organs do not betray signs of inflammation, and the morbid stools in that case no more indicate a disease of the liver, than the morbid secretions of the mouth indicate a disease of the tongue and salivary glands. A similar mode of reasoning might with equal truth be extended to many chronic diseases, in which the secretions of the liver are disordered, not from an actual disease of that organ, but from an existing irritation in the nervous system; and that irritation in some in-

stances I have known to be created and maintained by the unnecessary employment of mercury, so that the changes of the biliary secretions were first occasioned by this preparation, which was afterwards continued, upon a mistaken principle, to restore those secretions to a natural state. In the process of making common ale, brewers know very well what great changes will be produced in the colour and taste of that liquor, by very slight changes in the continuance and degrees of the heat applied; and so it is, to a certain extent, in the chemical operations going on in the human body, very slight changes in the continuance and degree of morbid temperature affecting the qualities of the secretions.

But though it may be the variations, which the animal heat undergoes in ordinary fevers, by which the secretions are so much influenced in them, yet no doubt something is superadded in specific fevers. The subtile essences of contagion work many changes, as we may see in the peculiar appearances of the tongue and in other secretions, to say nothing of the special assimilation by which their existence is maintained; and these changes having been once fairly established, I believe with Sydenham, that the blood must undergo some purifying process, before recovery can take place, an opinion which appears to be confirmed, by the gradual improvement in the secretions as convalescence approaches.* No-

* Many years ago, I saw typhus treated from an early period upon the cordial plan. It then not only always ran a certain course, but

thing could have been more morbid than the intestinal and biliary secretions which I have seen in some cases of typhus so far advanced as to render much medical interference more dangerous than useful; and yet as the excitement abated, as the heart's action and the animal heat became natural, the secretions assumed a healthy appearance, though nothing but a little cold-drawn castor oil had been exhibited. The blood is always blacker in typhus than natural. In severe cases it is remarkably so where the excitement has fully emerged, and at last the solids are most decidedly affected, as any one may perceive who marks the dark hue of the muscles on dissection. This state of the blood in typhus, if I mistake not, is connected with that peculiar depression of strength, and with the peculiar condition of the sensorium, which attend the rise and progress of this disease. Nor may the influence of this state be confined to some chemical change in the constitution of the blood, by which the nervous system and the heart are affected, but possibly some mechanical alteration may thereby take place in the red particles, so that the natural relation

was accompanied with malignant symptoms towards the close; and I observed, that the attendants and visitors of the sick were very liable to be infected. But on the contrary, in those cases which I have had an opportunity of cutting short at the very outset, or so moderating as to make them assume a mild aspect, I have rarely seen the attendants or visitors sicken of typhus. From these facts, perhaps, it might be inferred, when the disease was cut short or moderated in the beginning, that comparatively little contagious matter had been generated, and hence a great advantage may arise to the community from the modern mode of treatment.

between them and the capillary vessels may be more or less disturbed. But the nature of this change in the blood, I do not pretend to determine, and only meant to point to it as an object worthy of far more attention than it has yet received.

As it is of great consequence in the congestive forms of fever, to raise and equalize the animal heat to the natural standard, so it is also highly important in the excitive forms of fever, whether simple or complicated, to reduce the animal heat as nearly as possible to the natural standard all over the surface of the body. This is a practice more especially useful in those fevers which have an idiopathic character at the commencement, and in which the topical affections are the gradual products of the continued excitement. The efficacy of the cold and tepid affusions at the outset of excitive fevers was proved to be considerable by the late Dr. Currie, and perhaps they would have been more so, if he had combined them with those evacuations, which have been found so useful since the first promulgation of his enlightened views. Though when an excitive fever has gone on for several days, the prostration of the system precludes the shock of the cold effusions, yet much benefit may often accrue by lessening the animal heat day after day, and night after night by the occasional use of ablutions, partially or generally on the surface, according to the predominance of the heat, and to the strength of the patient. In particular, the greatest relief may be

frequently obtained from the head-ache and general distress attendant on typhus, merely by shaving the head, and preventing the accumulation of heat about the scalp; nay, I am fully convinced, that by this simple procedure the organization of the brain may often be preserved from the most serious mischief in the progress of typhus, and similar fevers. In referring to my notes, where I had ordered the head to be shaved, and kept cool in typhus, the pain, aching, giddiness or other prominent symptom for which it was adopted, has so often been reported much easier or entirely removed on the next day, that there are few cases in which I should not now strongly recommend the measure. The heat is often highly accumulated about the head, and when it is diminished by shaving and washing the scalp, it is probable, on the known law of caloric equalizing itself, that the internal heat of the brain is also lessened; and thus the cerebral vessels may become much less distended than they were before, by the abstraction of super-abundant caloric from the scalp. But whatever may be the rationale, the benefit is certain. It is to little attentions of this kind, that life may be sometimes saved in fever, however trifling they seem to the theorist.

The animal heat is one of those excitants by which nature appears to keep the heart in regular motion, and between the variations of the degree in the one, and of the action in the other, remarkable relations will be found in many diseases. When the animal heat is permitted to re-

main long preternaturally high it not only keeps up the increased action of the heart and thus endangers the functions and structure of other organs, but it likewise at last exhausts the heart, and the tone of the whole system: on the contrary, when the heat is daily and nightly diminished in continual fevers by tepid ablutions, light clothing, and a free circulation of fresh air, the heart's action will be moderated, and the strength proportionably saved. On many occasions, I have seen patients with a burning skin, rapid pulse, and a parched, stiff dry tongue, in the advanced stage of typhus, but on sponging the surface over with tepid water, the heat has fallen, the pulse has grown slower, and the tongue comparatively soft and moist; and from a repetition of the same treatment when the pulse again became higher, the pulse quicker, and the tongue drier, the recovery has been finally ensured, through the co-operation of mild laxatives, and light nutriment. The attention of the faculty has been so decidedly directed to the employment of the cold affusions in the early stage of fever, that the partial or general use of tepid ablutions has been far too much neglected in the middle and last stages; but let any man try them in these stages of the ordinary cases of typhus or of the common continued fever, and he will be convinced, that they have a great though a gradual influence on the issue of the disease. Yet, there will be less need of their repeated employment,

if the bed-clothing be duly regulated, which should nearly always be made somewhat lighter towards the evening and during the night, when there is usually an increase of the heat on the surface. As this temporary increase of the heat often gives a sort of false fulness to the pulse even in the advanced stage, the practitioner should remember this circumstance when he makes his visit at night; for this semblance of strength in the pulse should not betray him into active measures at an advanced time of the fever, and indeed if he wait till the next morning, he will generally find the pulse much smaller and softer. It was once my design to have written a short essay on the treatment of idiopathic fevers arrived at the middle and last stages, but having thrown out so many hints on the superiority of mild measures at those periods, such an undertaking would now perhaps be superfluous; though I must remark in concluding this topic, that if any thing more than another could have shown to me the utility of not extending the active treatment beyond the line of the middle stage, it would have been my experience in the Fever Institution, where patients are so frequently admitted late, and where in that case the general result has been decidedly in favour of a mild treatment.

Little has been said in the preceding pages with respect to those fevers which proceed from marsh and similar effluvia; because my experience in them has been exceedingly limited. It may, however, be observed, that the doctrine of a con-

gestive, a simple, and an inflammatory variety of fever applies to their internal pathology, though they have certainly some striking peculiarities which depend upon the nature of their exciting cause. It would be easy to show from the writings of experienced authors, that marsh effluvium produces sometimes sudden and great venous congestions, by which the usual and proper series of febrile phenomena is completely interrupted; and indeed I have myself seen a few instances of this nature where instead of the common signs of the cold and the consequent ones of the hot and the sweating stage, the patient was distinctly threatened with apoplexy at the accession of the fit. The ordinary intermittent might be adduced as an example of a simple fever, in which there is a first stage of oppression, a second of excitement, and a third of collapse in every regular paroxysm; and though it is truly marvellous that the fits should come at stated intervals, yet during the apyrexia there are often signs of venous congestion which may possibly be associated with the alternate excitements, and which sometimes lay the foundations of local mischief within. The remittent forms of marsh fever are invariably connected with local irritations, which appear so to modify the operation of the exciting cause as to break through the true intermittent character; and a still higher degree of these local irritations in their turn will break through the remittent character, and produce a continued fever, by main-

taining a constant increase of the heart's action and of the animal heat. It is a remark of Sydenham, that when intermittent fevers were rife, continued fevers were liable to be concomitant; and the same cause which produces the former unquestionably also sometimes produces the latter, either from being applied in a more concentrated state, or from operating on a system where local irritations are easily created. The cold stage of a simple ague affords an instance in which although venous congestion exist, yet the lancet cannot be employed on account of the excessive reduction of the temperature of the body; and it likewise affords a beautiful illustration of the production of the hot stage, by the blood retiring into the interior, and at last rousing the heart into an energy which it did not possess before. The common continued fever, typhus, and other acute diseases so far resemble the marsh remittent fever, that they usually have some abatement of the pyrexia in the morning; but this more remarkably obtains with what has been called the infantile remittent fever, which proceeds from ordinary causes, and which may generally be cured by local bleeding, mild mercurial purges, anodynes, a very spare diet,and the tepid bath.

It seems to be a received opinion by many, that epidemical fevers in particular are not under the same influences as sporadic fevers, and that their cure is involved in much greater obscurity. But do they not, like sporadic fevers, assume the

congestive, simple, or inflammatory forms? And under this view, are they not, like them, also reducible to precise rules of practice? Yet it is not meant to insinuate, that all epidemics are essentially the same; for it must be manifest, that a similarity in the aspects of the concomitant pyrexia does not establish a sameness in kind, neither does the existence of a sameness in the incidental symptoms; but the distinguishing, pathognomonic symptoms must all agree in kind, which they do not, to justify the conclusion, that epidemics ought to be classed under one head. Nevertheless, it is in the medical, as in the moral world, similar effects may be produced by different causes; and I do mean distinctly to say, that, beside their peculiarities, epidemics generally have such external phenomena, and generally produce such internal derangements, as to prove them to be attended with a congestive, a simple, or an inflammatory fever, by the character of which the treatment must be mainly regulated, however various their abstract nature or their origin. If an epidemic were to appear one year under a simple form, it would readily yield to the ordinary remedies; but if in another year it appeared under a highly inflammatory or congestive form, those remedies would be found completely inefficient:—yet from such a result, it would be wrong to conclude, that the epidemic observed no certain laws, for in both the cases supposed above, the febrile phenomena would

be governed by regular, though somewhat different laws; and the failure in the last mentioned, should be attributed to the practitioner not having marked this discrepancy, which required a correspondent variation in the treatment. The fact is, that in the several varieties of the same epidemic, as different modes of practice are frequently required, as if they were dissimilar diseases, which might be instanced by the histories of the plague, and of several marsh, scarlet, typhous, and other fevers, which have prevailed epidemically under congestive, simple, or inflammatory characters, and in which similar measures have been erroneously extended to all the forms of the same species of fever. Comets were long supposed to differ from other heavenly bodies, in not being regulated by the same fixed laws; and doubtless such a supposition contributed, in part, to prevent that constant and close observation necessary to perceive how any natural phenomena are directed. This conjecture, however, is now totally removed, by the discoveries which have been made in astronomy. And has not the notion that epidemics do not observe the laws of ordinary fevers operated in a similar way, to retard our investigation into the powers which control them? In our successive advances in medical knowledge, we have found the greater part of diseases under the influence of certain modes of action; and our interest in future will be, not in denying that any are altogether or

nearly without order, but in diligently inquiring into those laws by which they are governed. As it was by extending the principle of centrifugal, and centripetal forces to the motion of comets, that they were discovered to be regulated by the same fixed laws as other parts of the solar system, —so it would be most pleasing to find, that the doctrine of a congestive, a simple, and an inflammatory variety of fever might be successfully applied to the whole circle of epidemics,—which may almost be considered as *cometary* in relation to other febrile diseases, and which really shed a disastrous influence over the world.

For several years past, considerable attention has been paid to ascertain the accuracy of those distinctions which have been made in regard to the varieties of typhus; and it is confidently believed, that they have their foundation in nature, no less in this than in many other fevers. Systematic writers have disregarded these distinctions, which are constantly to be seen at the bedside, and from the due consideration of which correct and comprehensive modes of cure are principally to be deduced. The characters of particular fevers vary at different seasons as the simple, the inflammatory, or the congestive happens to predominate; nay, even the character of the same variety of fever varies according to the time of its duration, so that the *methodus medendi* requires changes correspondent to all these circumstances. The most beneficial remedies have been brought into disrepute by having been employed

without due regard to the varieties or to the stages of acute diseases; but it is only by marking such minutiæ that we can ascertain the pathology and treatment of fever, which often, like the human character, is best discovered by what at first might seem minor circumstances. Unless medical men do assiduously investigate every thing relating not only to the symptoms, but also to the occasions and consequences of those symptoms, as well as to the acquired and constitutional peculiarities of the sick, their practice will be alike indiscriminate and dangerous, in all those cases at least where nice observation is demanded.

It is one of the great advantages of modern medicine, that pathology has been associated with physiology, that a knowledge of the healthy conditions has been considered essentially necessary, inasmuch as the morbid conditions are merely deviations from these. As all the functions may be justly said to be less or more implicated in the range of fever, its pathology in this work has embraced all the tissues of the body, because disturbance of function itself can only arise from some disturbance in the material organ with which it is connected. In fact every disease is organic when strictly regarded. What is, however, commonly called functional, so far differs from what is commonly called organical disease, that though the tissue affected in the first be disordered in its nervous, vascular, and perhaps chemical laws, yet it has not a certain supernumerary change of structure which attends the last; so that in the

one the healthy state may often be readily restored by natural or artificial means, while in the other, unassisted nature has generally little or no power of restoration, and art is frequently quite unavailable. The influence of medicine consists rather in controlling the irregular movements, than in repairing the marked alterations of structure in the animal machine. Disease is demonstrated by some disorder of the functions, and these have been so arbitrarily arranged by authors, that I have chosen to consider them under three classes, namely, the vital, the mechanical, and the chemical, this being to my apprehension the order of nature. The vital functions principally belong to the nervous system, the mechanical to the vascular system and the solids, and the chemical to the circulating and secreted fluids:* but though each class of functions has its peculiar laws in health and disease, yet they reciprocally act on each other, as has been shown in considering the conditions of the nervous system, of the heart, and of the fluids in fever. When the progress of knowledge shall have removed much of that obscurity which at present hangs over the vital functions and their

* In relation to the chemical functions, it has been taken for granted, that all the secretions are diminished in fever, but I believe that this is a complete mistake. The great emaciation of the body under idiopathic fevers, where evacuations had not been induced, and where much of liquid had been taken, has convinced me, that there is some waste by the secretions, which we have not taken into account. An ingenious acquaintance once suggested to me, that the insensible perspiration might possibly be increased in fever, and I am about to institute some experiments in order to ascertain whether or not this be the fact.

relations with the rest, the practice of physic in acute diseases will probably be reduced to great simplicity and perfection; for though the grand effects of these diseases are conspicuous in the vascular system, yet some nervous influence would seem to be frequently behind the scene, upon which those effects may be wholly or partly dependent. Medical practice now is rather palliative than radical, it rather removes effects than causes; but instead of being thus indirect, it will probably become direct in some diseases, when we know more of the nervous system. Perhaps by more minutely noting the various actions of different drugs, particularly of narcotics,* we might at last be led to results, by which many febrile excitements would be reduced with greater certainty and rapidity; for the operation of the Peruvian bark and of arsenic in preventing the return of an intermittent, and the power of opium and of colchicum, not to adduce other examples, in controlling some species of pain and irritation, surely warrant us in expecting more important discoveries of this kind. The phenomena, however, of living bodies cannot be referred, like those of inanimate matter to any single law whatsoever, and therefore we must

* The effects of the narcotic tribe are so infinitely diversified as to form a subject worthy of the closest inquiry. Our knowledge of the *popular state of medicine* is exceedingly limited, but if it were extended through different classes and countries, I am fully persuaded that many highly valuable remedies would be found, which have the sanction of long experience.

not look to one class of functions only, but endeavour to investigate the separate and united influence of the vital, the mechanical, and the chemical functions as they harmonize in health and are disturbed or disordered in disease; and when we reflect upon the improvements which have recently taken place, and consider the zeal with which medicine is now prosecuted, we cannot but anticipate its future advancement in every department, since the impulse so strongly communicated may not cease to operate, but be productive of continued and greater exertions. The numerous labourers of the present times have contributed to clear away the ruins and the rubbish of past systems, and to lay a deep and a broad foundation; but the ample superstructure of the science is left to be firmly and splendidly reared, by the medical architects of future ages.

In concluding a work which has occupied a large portion of my life, perhaps I may be excused if for once I give way to personal emotions, and express the gratification which the public assurance of its utility has afforded. That my labours should have proved of the least service, is a full compensation for whatever anxieties may have been attendant on the arduous circumstances under which they were prosecuted; and as I value the approbation of the liberal part of my professional countrymen next to my own esteem, so I shall endeavour to deserve it by a still more exclusive devotion to medical science. There cannot be any pursuits more worthy of the employment

of our active powers than those which meliorate the condition of our fellow creatures; and entertaining nothing but feelings of benevolence towards all mankind, I can truly close this volume in the spirit as well as in the letter of Sydenham. Sanè cum supremus vitæ meæ instabit dies, confido mihi adfuturum alacrem in præcordiis testem, me non solum ægrorum omnium, cujuscunque demum sortis, qui sese curæ meæ concrediderant, summa fide ac diligentia salutem procurasse (quorum interim nemo à me aliàs tractatus est, quàm ego memet tractari cuperem, si mihi ex iisdem morbis ægrotare contingeret) verum etiam pro ingenii modulo omnes animi nervos intendisse, ut si quo modo fieri possit, morborum medela post cineres meos majori cum certitudine administraretur.

THE END.

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